PB85-238525

National Surface Water Survey Western Wilderness Area Lakes Environmental Assessment (Final)

(U.S.) Environmental Protection Agency
Seattle, WA

Apr 85

U.S. Department of Commerce
National Technical Information Service
NTIS

50272-101

REPORT DOCUMENTATION PAGE

1. REPORT NO. 910/9-85-126

2.

3. Recipient's Accession No. PB85 238525 /AS

4. Title and Subtitle
NATIONAL SURFACE WATER SURVEY WESTERN WILDERNESS AREA LAKES ENVIRONMENTAL ASSESSMENT. FINAL.

5. Report Date April 1985.

6.

7. Author(s)

8. Performing Organization Rept. No.

9. Performing Organization Name and Address
U.S. Environmental Protection Agency Region 10
1200 6th Avenue
Seattle, WA 98101

10. Project/Task/Work Unit No.

11. Contract(C) or Grant(G) No.
(C)
(G)

12. Sponsoring Organization Name and Address
U.S. EPA Office of Research and Development
401 M Street SW
Washington, DC 20460

13. Type of Report & Period Covered

14.

15. Supplementary Notes

16. Abstract (Limit: 200 words)

This document modifies and supplements the draft environmental assessment (EPA 910/9-85-125), which was presented for comment in March 1985. The present document contains a revised summary and conclusions which incorporates changes in response to governemtn agency and public comment, supplementary analysis that has been developed in response to government agency and public comment, comments, and a public involvement plan.

17. Document Analysis a. Descriptors

Acid Deposition
Environmental Assessment
National Surface Water Survey

b. Identifiers/Open-Ended Terms

c. COSATI Field/Group

18. Availability Statement

19. Security Class (This Report)

20. Security Class (This Page)

21. No. of Pages

22. Price

(See ANSI-Z39.18) See Instructions on Reverse

OPTIONAL FORM 272 (4-77)
(Formerly NTIS-35)
Department of Commerce

EPA 910/9–85–126

EPA
UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY

APRIL 1985

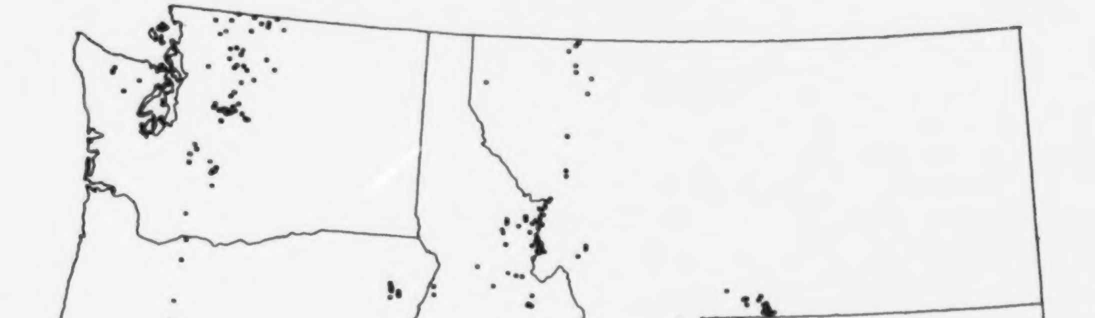
OFFICE OF RESEARCH AND DEVELOPMENT
401 M STREET, S.W.
WASHINGTON, D.C. 20460

REGION 10
1200 SIXTH AVENUE
SEATTLE, WA 98101

PB85-238525

National Surface Water Survey Western Wilderness Area Lakes

ENVIRONMENTAL ASSESSMENT



REPRODUCED BY
NATIONAL TECHNICAL
INFORMATION SERVICE
U.S. DEPARTMENT OF COMMERCE
SPRINGFIELD, VA. 22161

DISTRIBUTION OF LAKES TO BE SAMPLED

EPA 910/9-85-126

NATIONAL SURFACE WATER SURVEY
WESTERN WILDERNESS AREA LAKES
ENVIRONMENTAL ASSESSMENT

April 1985

RESPONSIBLE OFFICIALS:

Bernard D. Goldstein	Ernesta B. Barnes
Assistant Administrator for Research and Development	Regional Administrator
U.S. Environmental Protection Agency	U.S. Environmental Protection Agency
401 M Street, S.W.	Region 10
Washington, D.C. 20460	1200 Sixth Avenue
	Seattle, WA 98101

CONTENTS

Page

PREFACE iv

SUMMARY AND CONCLUSIONS v

APPENDIX E SUPPLEMENTARY INFORMATION AND ANALYSIS E-1

E.1. AN EVALUATION OF THE POTENTIAL FOR TWO ALTERNATIVE METHODS OF SAMPLING/CHEMICAL ANALYSIS TO BE "SIMILAR" E-2

E.2. RANDOMNESS OF SAMPLING E-7

E.3. SAMPLING SCHEDULE FOR EACH SUBREGION E-10

E.4. ACCESSIBILITY OF LAKES UNDER ALTERNATIVE 3 E-11

E.5. ATMOSPHERIC EMISSIONS OF HELICOPTER ENGINES E-12

E.6. COORDINATION AND PLANNING ACTIVITIES E-13

E.7. ALTERNATIVE CONSIDERED BUT NOT ANALYZED E-15

E.8. ERRATA FOR THE DRAFT EA E-16

APPENDIX F RESPONSIVENESS SUMMARY F-1

F.1. LIST OF COMMENTS F-2

F.2. COMMENT LETTERS SUBMITTED ON THE DRAFT EA F-3

F.3. RESPONSE TO COMMENTS F-34

APPENDIX G PUBLIC INVOLVEMENT PLAN G-1

PREFACE

This Environmental Assessment (EA) has been prepared by the U.S. Environmental Protection Agency (EPA) under the National Environmental Policy Act of 1969 to evaluate the environmental consequences of sampling lakes in federally designated wilderness areas in the West. The proposed sampling would be done as part of the National Surface Water Survey. The EA evaluates various alternatives for gaining access to wilderness areas, including: Alternative 1 - access by helicopter only; Alternative 2 - access by ground; Alternative 3 - access by a combination of helicopter and ground; and Alternative 4 - no sampling of wilderness area lakes. With respect to Alternative 1 and 3, the EA also addresses the concerns of the U.S. Forest Service and the National Park Service about the use of helicopters under the strict limitations of the Wilderness Act of 1964.

The present document modifies and supplements the Draft EA which was distributed for public comment in March 1985. The present document contains the following sections:

1. A revised Summary and Conclusions which incorporates changes in response to government agency and public comment;
2. Supplementary analysis that has been developed in response to government agency and public comment;
3. Errata, giving changes of text of Draft EA;
4. Comments on the Draft EA and EPA responses; and
5. A public involvement plan.

References to the EA in this document refer to the Draft EA and revisions included with the present document. Copies of the March 1985 Draft EA can be obtained by request at the following address:

Wayne D. Elson
EA Project Officer, M/S 443
U.S. Environmental Protection Agency
1200 Sixth Avenue
Seattle, WA 98101
Telephone: (206) 442-1463
(FTS) 399-1463

SUMMARY AND CONCLUSIONS

PURPOSE AND NEED

The U.S. Environmental Protection Agency (EPA) is proposing to sample 498 lakes in federally designated wilderness areas and national parks during the western part of the National Surface Water Survey (NSWS). The NSWS is a key component of a Congressionally mandated national effort to evaluate the extent of aquatic resources sensitive to acidic deposition and to assess the environmental, social, and economic effects on these resources.

Sampling protocols established for the national survey call for the use of helicopters to gain access to lakes. The Wilderness Act of 1964 severely limits the use of helicopters and other mechanized equipment in wilderness areas. However, there are two relevant exceptions in the Act under which the Forest Service (FS) and National Park Service (NPS) might permit authorization of EPA's proposed helicopter use:

1. Helicopter entry may be authorized if such entry is necessary to meet minimum requirements for administration of the wilderness areas [Sec. 4(c)]; and,

2. Helicopters may be used for the purposes of gathering information about resources if helicopter operations are carried on in a manner compatible with preservation of the wilderness environment [Sec. 4(d)(2)].

As the agencies responsible for managing the wilderness areas involved, the FS and NPS will determine whether an exception to the Wilderness Act's general prohibition of helicopter use applies. Thus, the FS and NPS can grant permission to EPA to carry out the lake survey if either of two findings can be made:

1. Helicopter access to acquire information to be used to assess the extent of acidic deposition, to develop baseline data, and to contribute to programs for controlling acidic deposition is necessary to meet minimum requirements for the administration of the wilderness areas; or

2. Helicopter access as proposed by EPA for the purpose of gathering information about natural resources is carried on in a manner compatible with the preservation of the wilderness environment.

EPA has prepared this Environmental Assessment (EA) to evaluate the environmental consequences of alternative means of gaining access to wilderness areas to meet the objectives of the NSWS. This assessment is being provided to the FS and the NPS.

The NSWS is part of the Interagency Federal program on acidic deposition (NAPAP). Under this program the aquatic effects task group has three major objectives:

- quantification of the extent of acidification and sensitivity of lakes, streams, and groundwaters;
- identification, quantification and predictive modelling of the factors that control the susceptibility of surface waters to acidification;
- determination of the relationships between surface water chemistry and aquatic biota.

The NSWS consists of three phases designed to contribute data for the Federal Interagency Task Force to be used in assessments submitted to Congress: Phase I is designed to quantify the regional chemistry of lakes and streams throughout the United States, with a focus on areas now believed to contain the majority of low alkalinity waters; Phase II will quantify the biological components and temporal variability of water chemistry within and among regionally representative lakes and streams, as determined in Phase I, and Phase III will initiate long-term monitoring of lakes and streams representative of major geographic regions of the United States. This EA is concerned only with Phase I of the NSWS except as it relates to selecting lakes for Phases II and III. EPA contemplates no need for using mechanized access or structures in wilderness during Phases II and III of the survey.

The primary objectives of the Phase I survey are to determine:

1. what percent (number, area) of lakes in regions of the United States potentially sensitive to acidic deposition are acidic (have pH values less than 5.0);
2. what percent (number, area) of lakes in regions of the United States potentially sensitive to acidic deposition have low alkalinity, and what is the distribution of alkalinity values;
3. what is the chemical composition of lakes in regions of the United States potentially sensitive to acidic deposition; and
4. what lakes are regionally representative and should be selected for study in Phases II and III.

The Phase I portion of the NSWS was completed for 2046 lakes in the eastern and midwestern portions of the United States during the fall of 1984. In these regions, lakes were sampled by helicopter. The continuation of the NSWS on 888 western lakes, of which 425 fall within wilderness boundaries, is proposed for the fall of 1985 and will complete the Phase I effort. Field sampling is scheduled to occur during the fall because mixing of the lakes at that time will minimize seasonal and spatial variability of lake chemistry and maximize comparison between lakes.

It is critical that a national survey of surface waters develop data on the entire geographic distribution of vulnerable surface waters within each region because (1) the potential consequences of emission- control policy decisions are national in scope and (2) long-range transport of pollutants can result in impacts remote from the emission sources. As a result of the distribution of lakes in the West, sampling within the boundaries of wilderness areas is necessary to preserve the geographic coverage of the survey. This is especially true because the majority of lakes of the greatest susceptibility (lowest alkalinities) occur in the wilderness areas. Phase I is an essential first step in the NSWS, and has been statistically designed with the objectives listed above to address key questions posed by policy and assessment staff. An important consideration in designing Phase I has been to ensure that the data collected are of sufficiently high quality to serve as a basis for choosing representative sites for Phases II and III.

The variables, analytical methods, and sampling protocols proposed for the NSWS (and used in the East in 1984) were critically reviewed by, and developed with concurrence of environmental scientists and analytical chemists from a variety of U.S. and Canadian institutions including the USGS, Illinois State Water Survey, universities, and consulting firms (USEPA 1984b,c). The chemical variables chosen, as well as color and turbidity, were selected as the minimum number to be measured to evaluate adequately the present status of future effects on sensitive lakes. The selection of specific methods was governed primarily by requirements for low minimum detection limits, necessarily low due to the nature of the most sensitive lakes, which characteristically have very low concentrations of the constituents of interest in this study.

Survey data are not being collected directly for regulatory purposes, but rather, to document the extent and distribution of sensitive and already acidic systems. EPA needs high quality data to ensure that future policy is based on a sound, scientifically defensible position. The adequacy of the data for a given objective is a scientific judgment which is necessarily subjective. EPA has determined the necessary quality of data by communicating directly with all primary data users and by subjecting the NSWS design to extensive peer review by experts in the field of acidic deposition. The quality of data is not a legal issue at this time; however, it will underpin future policy decisions and possibly regulatory actions.

From the standpoint of timely development of acid rain policy, it is of extreme importance that the current status of all potentially sensitive United States surface waters is understood. Until recently acid rain policy analysis has focused primarily upon the need for protecting eastern surface waters.

This focus resulted from the recognition that the northeastern U.S. contained potentially sensitive areas downwind from the areas of highest emission density. It is recognized that portions of the mountainous West are also potentially sensitive to acidic deposition. However, the absence of emission densities of the magnitude of those found in the Midwest and a less certain source-receptor relationship resulted in a general perception that acidic deposition was of less serious concern in the West. Recent reports from the Environmental Defense Fund and the World Resource Institute have argued that existing emissions sources do pose a threat to sensitive areas in the West. The arguments put forth are primarily based upon emissions and deposition data and not upon observed effects on surface waters. The quickest and most definitive way to evaluate the seriousness of this concern is to carry out a systematic survey of sensitive surface waters in the West. However, to effectively incorporate the West into the development of national acid rain policy and acid rain research planning, it would be necessary that a western survey parallel the existing survey, both in terms of its timeliness and the comparability of data. To delay the collection of these data to the fall of 1986 or later would seriously hamper the development of a comprehensive acid rain policy and the coordinated planning of acid rain research.

Without quantitative, empirical data on acidification of western surface waters, EPA would not be in a position to consider the need for emission reductions in the West for the purpose of protecting western sensitive areas. This would mean, if damage is occurring, that a direct consequence of deferring its detection would be to defer the initiation of appropriate actions to halt or reverse this damage. The Administration has chosen to defer a decision on the need for additional controls on sulfur oxides pending additional scientific information. Both Congress and the Administration are working to find as expeditious a solution to the acidic deposition problem as scientific understanding will allow. An empirical understanding of the status of western lakes is critical for forming a national view of the acid deposition problem.

The Wilderness Act (1964) gives the FS responsibility to protect the wilderness resource on National Forest System lands from man-caused degradation. However, in response to air pollution, action under the Wilderness Act could probably be taken only after an impact on the Wilderness has occurred and consequences may be difficult to reverse once detected.

The 1977 Amendment to the Clean Air Act established an air quality program, Prevention of Significant Deterioration (PSD), which is designed to maintain air quality in those portions of the country where the air is cleaner than that which is required to protect public health.

Included in the PSD program are the following:

1. The establishment of certain national parks and wilderness areas as Class I areas.

2. The establishment of a permitting process that requires certain new sources of air pollution to obtain PSD permit before construction and operation.

3. The establishment of small incremental limits or the amount of sulfur dioxide (SO_2) and total suspended particulates (TSP) that, except under certain circumstances, permitted new sources can add to Class I areas.

4. The requirement that the federal land manager take an affirmative responsibility to protect air quality related values (AQRVs) in Class I areas from adverse impacts caused by air pollution. Such action may result in denial of a PSD permit.

5. The establishment of a system which may allow the exceedence of Class I increments if a new air pollution source can demonstrate to the satisfaction of the federal land manager that there will be no adverse impact on air quality related values.

The only AQRV identified in the Clean Air Act is visibility. However, other AWRVs identified by the FS are flora, fauna, soil, water, odor, cultural, archeological and geological features.

ALTERNATIVES

Four alternatives are evaluated in the EA: (1) access by helicopter to all wilderness lakes to be sampled, (2) access by horseback or foot to all wilderness area lakes to be sampled, (3) access by helicopter or ground (the mix to be determined by a maximum 7 h transport time from the lake to a helicopter landing site outside the wilderness), and (4) no sampling of wilderness area lakes in the study (i.e., the no action alternative).

Alternative 1 would involve using sampling protocols developed for the NSWS and already used successfully in completing the survey in the upper Midwest, the Northeast, and the Southeast. Helicopters would fly to each lake, land on the lake to obtain a water sample (a process taking approximately 20 min.), and then proceed to the next lake or return to a field base laboratory. All samples would be analyzed and processed for shipment to an analytical laboratory for further analyses by methods identical to those used in the East.

Alternative 2 would involve horse or foot access to all lakes to be sampled. With horse access, sampling crews of four people (two samplers, a wrangler/guide, and at least one rider to transport the samples) and eight animals (four riding horses and four pack animals) would be used. If access by foot were to be used, a crew of at least four people would be needed for packing the sampling and camping equipment. Additional people (total 6 to 8) would be needed for transporting the samples out of the wilderness area. Samples would be collected using an inflatable boat. All chemical variables measured for Alternative 1 would also be measured under this alternative, but NSWS sampling protocols would be modified in that samples would be filtered and processed for transport at the site of collection to reduce time constraints. A pilot study to determine comparability of data gathered by ground vs by helicopter would be completed for this alternative. Samples would be transported to the field base laboratory.

Alternative 3 would involve horse or foot access to lakes within wilderness areas from which samples could be transported to a helicopter landing site within seven hours. Samples would be collected from an inflatable boat as in Alternative 2, but would then be transported immediately to a landing site so that they would arrive at the field base laboratory in time to be processed within a 12 h time limit (i.e., samples would have to be transported to a helicopter landing site within 7 h; a transport time in the helicopter of 1 h is assumed; processing time in the field base laboratory would take 4 h). All chemical variables would be measured as in Alternative 1. Helicopters would be used for gaining access to all lakes where distance or difficulty of access by other means would prevent samples from being transported to a helicopter landing site within the required 7 h. Helicopters might also be used as a last resort for some closer lakes if weather prevented ground access.

Alternative 4 is the no action alternative. No lakes would be sampled within wilderness area boundaries. Helicopters could be used to sample randomly selected lakes outside wilderness areas as was done in the eastern and midwestern portions of the NSWS, but results would not be applicable to wilderness areas because a significant portion of the West and areas of greatest susceptibility would not be sampled.

AFFECTED ENVIRONMENT

Of the 888 lakes randomly selected for sampling in the West, approximately 425 are located in federally designated wilderness areas and 73 are located within national park areas that are not presently designated as wilderness. Nine additional lakes are located in a roadless area on the Wind River Indian Reservation in Wyoming.

Large portions of the national parks included in the survey are currently proposed wilderness and are managed as wilderness until a final decision is reached on their designation. Because entry into wilderness areas on Indian Reservations is controlled by Native Americans (25 CFR 265), any entry onto tribal lands for the purposes of this study must be approved by the appropriate tribe.

Wilderness areas have been established under the Wilderness Act of 1964 (P. L. 88-577) and related legislation as part of a National Wilderness Preservation System. The primary reason the National Wilderness Preservation System was established was to preserve an enduring wilderness resource characterized by naturalness and outstanding opportunities for solitude. While permitted, primitive recreation is constrained by the primary purpose of wilderness preservation. These areas are to be devoted "to public purposes of recreational, scenic, scientific, educational, conservation, and historical use." Wilderness values related to preservation of wilderness character and its solitude are of great importance. Wilderness uses include backpacking, fishing, hunting, and other activities.

Biological resources in wilderness areas and national parks include a wide variety of plant and animal life. Typical wildlife includes large mammals such as the black bear, cougar, elk, deer, moose, mountain goat, and mountain sheep, and smaller mammals such as the bobcat, mink, and raccoon. Sport fish such as the rainbow, golden, brook, and cutthroat trout, and chinook salmon are present in certain areas.

Endangered species that may be present in or near these areas include the woodland caribou, gray wolf, bald eagle, whooping crane, American peregrine falcon, and Kendall Warm Springs dace. Threatened species include the Arctic peregrine falcon, grizzly bear, Paiute cutthroat trout, Greenback cutthroat trout, and Little Kern golden trout.

ENVIRONMENTAL CONSEQUENCES

Environmental consequences of the four alternatives are considered in terms of (1) potential environmental impacts on the existing wilderness environment and (2) potential effects on the objectives of the NSWS, which have been developed to obtain data for evaluating the impacts of present and potential future acidic deposition.

Environmental Impacts

Alternative 1 (Helicopter access only)

Wilderness values. Impacts on wilderness values are assessed from three perspectives: experiential, mental and moral restoration, and scientific. Only the first two (experiential and mental and moral restoration) are likely to be affected if Alternative 1 were selected.

In terms of experiential values, the chief impacts associated with the various western wilderness areas would likely accrue from a public more concerned with the fact of an intrusion than with the specifics of the reasons for the intrusion. The enjoyment of nature is the primary value in the wilderness experience. The aesthetic benefit believed to be derived from enjoying nature is the highest benefit identified in psychological studies of the motivations people have for visiting wilderness areas. That the visual and audible presence of a helicopter would be incompatible with visitors' expectations of the aesthetic quality of a wilderness is clear.

The proposed use of helicopters as EPA's preferred sampling access technique (Alternative 1), or in combination with ground-access sampling (Alternative 3), is predicated on the concept that long-term wilderness values are sufficiently threatened by acidic deposition (to natural ecosystems) to justify the temporary intrusion into wilderness by mechanized equipment. Exemptions of normal restrictions on mechanized equipment could be made so that at a later date wilderness values could be protected and enhanced in a totally natural way. Further, use of helicopters would be in the fall, after the peak usage period.

In terms of mental and moral restoration, the proposed use of helicopters would cause impacts, generally transitory, to the sense of solitude and the opportunities it affords for restoration. Besides the noise, sight, and possibly, the blade blast of the helicopter, the occurrence of an activity (which was believed to be unauthorized) could be most disconcerting.

Wilderness' lack of discrepant and distracting influences is one of the principal reasons for its remarkable capacity to support the restorative experience. A temporary helicopter intrusion would have a negative effect on the sense of tranquility and compatibility with wilderness expectations. This experience could destroy the opportunity for reflection and integration.

To the majority of wilderness users who can visit for only a brief time (1-2 d), the intrusion of a helicopter could be more of an irritant than a threat to a deeper psychological experience. The two types of impact, while different in kind, could be comparable in the degree of negative effect on the wilderness experience.

Potential scientific values would remain unchanged because the proposed action would in all probability leave no physical changes to the wilderness (landing only on water) and would have only a transitory impact on wildlife due to the helicopters' noise and appearance. In terms of scientific values, the proposed survey is in keeping with the spirit of the Wilderness Act in that it would use the wilderness as a barometer, or yardstick, to further understanding of the threats of acidic deposition. The survey would contribute baseline data for the management of wilderness areas. The foremost value in wilderness management is taking those actions that preserve wilderness character, and that maintain the integrity of the wilderness. To the extent that other alternatives cannot meet the timing needs and quality guidelines of the lake survey, Alternative 1 could be in keeping with the spirit of the Wilderness Act.

EPA recognizes that the NSWS request could be considered as a precedent for using helicopters for planned research in wilderness areas. If the FS and NPS allow helicopter use, their decision will clearly document the criteria, thus limiting any interpretation of precedence.

Wilderness use. All recreational uses of wilderness areas will be affected by the noise of the helicopters used in the proposed action. Helicopters are comparable in sound level to heavy trucks and city buses. Helicopter sounds are different in character, however, from other modes of transportation. Takeoff, landing, and flyover each have a different combination and intensity of sound. A typical wilderness might have ambient noise levels in the range of 10 to 30 dB_A. The loudest noise from the proposed helicopter use would be approximately 90 dB_A at landing on the lake surface at about 500 ft. from an observer on shore. A typical wilderness visitor at a lakeshore would first hear the sounds of a helicopter approaching from a level flyover altitude of 2000 ft. Exact data are unavailable on the intensity of this sound, but it would likely be in the vicinity of 40 dB_A. As the helicopter lands, the sound intensity to an observer located 500 ft. from the deepest point of the lake would increase to approximately 80-90 dB_A. While on the water during the sampling (15-20 min), helicopter sound intensities would range from 56-66 dB_A if a reduced engine-idle speed could be maintained or 66-74 dB_A if full engine idle speed were necessary. Takeoff sound intensities would decrease with ascent from 83 dB_A to the intensities of the level flyover (40 dB_A and less) as the helicopter flew from the area.

The dominant impacts of the proposed helicopter sampling associated with recreational activities would be the sight and sound of the helicopters either landing and doing the sampling or flying overhead (or both). The impact on those who make the effort to get off the formal trail system and "away" would presumably be substantially greater than to those who follow established trails. Those wilderness visitors who have chosen a time of the week and time of the year when one might expect more solitude and tranquility could also experience a substantial sense of intrusion. The flightpaths of the helicopter overflights could be sensitively planned in many areas to avoid many wilderness users. Recreational users may frequently be present at camp sites which are highly clustered near lakes. The helicopters would unavoidably encounter recreational users because lakes are EPA's focus of interest. Impacts at campsites would be more disruptive than on trails, and impacts in remote, internal locations could be the greatest, despite their location. To some visitors the mere awareness of helicopter noise, no matter at what distance, would be a negative wilderness experience.

The most serious impact to fishing as a recreational activity would be the impact on the aesthetic dimension of the fishing experience. The proposed helicopter use involves sampling away from the shoreline at the deepest point in each lake and would have minimal impact on fishing potential on a given day.

Hunting for some species (such as bighorn sheep or mountain goats) is essentially wilderness-dependent because these species are found generally only in such areas. For other species, such as deer or elk, that are not so wilderness-dependent, hunters may nevertheless seek out wilderness settings as being most desirable for their activity. Popular big game species such as bighorn sheep and mountain goats are creatures of quite predictable habits. If they are startled by the sight and sounds of the proposed helicopter use, the fright response would be temporary. Studies show that such animals can be readily tracked (by experienced hunters) after such a disruption; presumably, therefore, the hunt could be resumed in a timely way. In addition, it is anticipated that reduced visitation in the fall would result in fewer users being affected by the helicopters than during more popular hiking and camping seasons. On the other hand, for those people visiting wilderness specifically for more solitude and remoteness, the helicopter's presence would be a significant intrusion.

Wildlife. The only likely adverse impact on wildlife associated with the use of helicopters would be the effects of noise. Most noise effects, however, have to do with long-term exposure to relatively high levels and the consequent permanent effects on health, physiology, or behavior. In the present case, the only probable effect of one or, at most, several overflights by helicopters would be a startle or fright response. Except in the relatively unlikely event of an accident suffered by a frightened animal, such impacts would be minor and transitory.

Endangered and threatened species. Potential impacts of helicopter use on endangered and threatened species are the same as for other wildlife, but are of greater concern because populations of these species may be particularly susceptible to damage. Thus, noise from helicopters during nesting seasons of bald eagles or staging of whooping cranes, for example, could disrupt these critical reproductive activities and contribute to threats to the species' continued existence. The timing and nature of the proposed activity under this alternative, however, make significant impacts to endangered species very unlikely. Possible exceptions are where lakes are near eagle or falcon sites. Ground access would be preferable in these situations because juveniles may remain in the nest area during the postfledging period. Close coordination with wildlife officials would help minimize any problems.

Even though four endangered or threatened fish species (a dace and three trout species) may be found in or near wilderness areas to be sampled in the NSWS, no adverse effects would be expected except in the unlikely event of a large accidental fuel spill into a small water body containing the species.

Water bodies. The major potential source of environmental impact to water bodies would be a spill or leak of fuel from the helicopters into the lakes being sampled. Leaks of hydraulic fluid and spills of other materials (e.g., pH standard solutions, freeze-gel packs) could also occur. For all but the smallest water bodies that could be encountered, no significant toxic effects would be expected, but a temporary visible sheen might result from any hydrocarbon spill or leak.

Human safety. The major safety concern with using helicopters would be an accident that resulted in death or serious injury to a member of the helicopter crew. The high altitudes and mountainous terrain associated with the proposed helicopter use involve dangerous flying conditions. Unpredictable downdrafts or tailwinds can be caused by sharp changes in the terrain and sudden changes in weather. Takeoffs and landings become much more demanding than in level-terrain, low-altitude flying. In the unlikely event of an accident during the proposed NSWS survey, a chain of other impacts involving search and rescue and salvage operations would begin and could involve dangerous mountain rescues by helicopters and/or climbers; there is also the possibility of a forest fire caused by a crash. Using an estimated total flight exposure for Alternative 1 of less than 1000 h, data suggests that the chance of an accident occurring during the survey would be 0.1 accident per 1000 h.

An additional consideration in regard to human safety is the potential for a helicopter to scare a horse and injure a rider, although a vigorous program of notification can minimize this potential problem.

Mitigation measures. To ensure that impacts to wilderness areas are minimized, EPA Base Coordinators would work closely with local FS, NPS, and Indian tribal land managers to identify lake-specific concerns. Specific mitigation measures would be developed in consultation with the land managers. These would include, but not be limited to, informing the public about NSWS activities in wilderness areas, using pilots experienced in flying in high altitude, mountainous terrain, adopting the "Fly Neighborly" program to reduce noise impacts, adjusting flight schedules to avoid times of the week (e.g., weekends) or day when high visitor use is anticipated, planning and scheduling flights to avoid sensitive wildlife habitat or activities (e.g., staging areas of whooping cranes), and avoiding areas during scheduled special hunts. Notification about the possibility of helicopter noise intrusion would be given to users to minimize the degree to which users are surprised by the noise and to reduce annoyance impact. The training of survey and helicopter crews immediately prior to the survey would include instruction on sensitive resources and implementation of mitigation measures, as well as training on safety procedures and survival techniques.

Alternative 2 (Ground access)

Wilderness values. Wilderness values would be minimally affected by conducting the survey under this alternative. Making national air quality decisions without sufficiently representative or accurate data could result in more severe, rapid, and extensive impacts of acidic deposition on given individual wilderness areas, the wilderness system in general, and/or similar areas throughout the country.

Wilderness use. This alternative would increase trail and campsite use during a time of year when wilderness visitors might reasonably expect more solitude and tranquility. The size of each survey crew would generally be compatible with the size of other parties visiting wilderness areas. Wilderness visitors could be negatively impacted by the survey crew camping near them at lakes, but presumably no more so than by other ordinary visitors. Using horses would contribute in a minor way to the damage to trails and camping sites by trampling and feeding on surrounding vegetation, expanding the trail width, increasing the trail's depth and erosion potential, and increasing soil compaction in tethering areas.

Because reduced levels of visitation by general users occur during the fall period when the survey would take place (although special uses such as hunting may peak during this period), conflicts of the EPA survey crews with other wilderness visitors for backcountry permits would be unlikely. In those wilderness areas where hunting season would be under way, a potential for conflict exists.

Wildlife and endangered/threatened species. Under this alternative, the effects of noise on wildlife would be eliminated. Although the possibility of human contact with wildlife would increase, its nature would be no different from that already occurring and no significant impacts to wildlife would be likely. Proper coordination with local wildlife officials will ensure that survey teams are aware of potential interactions with endangered and threatened species and of the proper responses to take in the event of an encounter.

Water bodies. Because sampling of lakes would be done from an inflatable boat, no impacts on water bodies would be expected. Any chemical reagents or standards needed in the field could be left onshore rather than carried in the boat.

Human safety. This alternative involves having many more people sampling high altitude lakes during the fall when weather conditions are very uncertain. Sampling teams could be isolated by early fall blizzards and be subjected to severe weather conditions. Using inflatable boats for sampling extremely cold, alpine lakes would be dangerous. In extremely cold lakes, the human body can tolerate less than ten minutes immersion before severe hypothermic conditions interfere with judgment and physical performance. An accident in the middle of a lake could, therefore, cause serious problems.

Accidents involving horses being ridden or led through rocky, mountainous terrain are not common, but are a possibility. Accidents involving backpackers could also occur. EPA would use personnel experienced in backcountry packing operations and would train less experienced members of the survey crew to minimize the likelihood of accidents.

Mitigation measures. EPA Base Coordinators would work closely with local FS, NPS, and Indian tribal land managers in identifying sensitive resources and developing appropriate mitigation measures. Experienced personnel would be used to handle stock and comply with regulations within wilderness areas. Training of survey crews would include instruction on safety procedures, wilderness values, and survival techniques. Radios would be provided for emergency communications and coordination of sample pick ups outside wilderness areas. Landing sites outside wilderness areas would be selected to avoid creating disturbances within these areas.

Alternative 3 (Helicopter and ground access)

Wilderness values and use. Impacts for this alternative would be intermediate between Alternatives 1 and 2, and would depend on the proportion of lakes sampled via helicopter vs ground.

Wildlife and endangered/threatened species. This alternative would involve some minor impacts from aircraft noise, but the overall incidence would be less than for Alternative 1 because a portion of the lakes would be sampled by ground crews. Significant effects could be avoided by proper coordination with local wildlife officials.

Water bodies. Potential effects (potential spills or leaks) on water bodies under this alternative would be unlikely and would only pertain to those lakes sampled via helicopter. For those lakes to be accessed with pack horses, the probability of impact is slight.

Human safety. Potential impacts would involve both the limited possibility of death or serious injury in a helicopter accident and the possibilities of accident in sampling cold, alpine lakes from a small rubber boat and in traveling by horse or foot in remote areas over difficult terrain.

Mitigation measures. Mitigation measures described for Alternatives 1 and 2 would be applicable to this alternative depending on the access mode chosen for a particular lake. EPA would work closely with the FS, NPS, and other land managers to determine which access mode would be used for which lakes. In addition to the criterion of 7 h in which to transport the sample from the lake to a pick up site outside the wilderness area, factors to be considered will include, but not be limited to, presence of sensitive resources within the specific areas, areas of high visitor use, schedules of special hunts, and safety considerations.

Alternative 4 (No action)

Wilderness values. This alternative would produce no data from wilderness areas that could be used specifically for identifying potential or realized acidic deposition problems inside the areas. Data collected for potentially sensitive lakes that do not include wilderness areas are likely to be biased at a regional level by underrepresenting the number of sensitive lakes. Control strategies based upon such a data base are, therefore, unlikely to place sufficient emphasis on the most sensitive areas. The present approach of wilderness area land managers is to conduct research on individual areas. The data developed from such efforts can be used to identify local situations where acidification may be taking place, but they are of limited value in dealing with the regional problems, inherent in acidic deposition, of evaluating trends throughout an entire region (i.e., including the western wilderness system) and developing regional solutions that would control emissions at their source. A potential long-term indirect impact to wilderness character could be severe if acidic deposition were to damage aquatic ecosystems and/or forest within the wilderness system. Because the western lake survey would be based only on non-wilderness lakes, the resulting data would likely be biased towards characterizing the less sensitive lakes and would contain no information on wilderness area lakes.

Wilderness use. There would be no direct impacts to wilderness users under this alternative. Indirect impacts may result from the absence of data generated by the survey that could be used to protect the areas from the effects of acidic deposition. Long-term degradation of wilderness characteristics could cause a diminished fishery resource, fewer and less vigorous game species, and loss of aesthetic quality of the natural setting.

Wildlife and endangered/threatened species. Because there will be no activities associated with the NSWS survey within wilderness areas under this alternative, there should be no direct, short-term impacts of the survey on human or ecological resources within these areas.

Human safety. This alternative would involve no impacts to human safety in wilderness areas because these areas would not be sampled.

Mitigation measures. Because no wilderness areas will be sampled, there is no need for mitigation measures to avoid or minimize impacts on these areas.

CONSEQUENCES FOR THE NSWS OBJECTIVES

The NSWS lake survey is designed to provide a high quality data base for assessing the nature and extent of lakes sensitive to and affected by acidic deposition throughout the United States. The development of these data will enable EPA to respond to a Congressional mandate to assess the sensitivity of water bodies to acidic deposition and to develop emission control policies to prevent further environmental degradation. The consequences of adopting each of the four alternatives on meeting these objectives are summarized below.

Alternative 1 (Helicopter access only)

Alternative 1 would enable EPA to meet the objectives of the NSWS as has been demonstrated with the Eastern Survey. The majority of lakes selected for sampling in the high mountains of the West would be sampled during a six-week period between mid-September and late October when a representative random sample can be obtained. Sampling protocols developed and proven during 1984 sampling in the midwestern and eastern portions of the NSWS, would be used. All critical chemical parameters needed for the survey could be measured. The data so obtained would be of similar quality and directly comparable to data from the other regions. In addition, there would be no difference between the sampling protocols used within and outside of wilderness areas. Logistical problems have been addressed in the 1984 fall surveys, and the experience gained in addressing these problems could be directly applied to the western survey.

Of the 21 chemical variables being measured, the analyses for extractable aluminum, pH, and dissolved inorganic carbon (DIC) are considered the most critical by EPA in terms of the requirements for sampling by helicopter to meet the maximum specified holding times. Information on these variables is needed to characterize the chemistry of the lakes so that data collected from detailed studies in Phase II and III can be extrapolated to a regional level, including wilderness area lakes. In the NSWS, pH will be used not only as an indicator of acidification status of lakes (first primary objective of the survey) but also as a quality assurance check on a number of other measured variables.

Dissolved inorganic carbon (DIC) consists of carbon dioxide, bicarbonate, and carbonate, the relative proportions of which are a function of pH. These chemical species contribute to alkalinity, which is a measure of the ability of water to absorb acidic inputs without changing pH, the measurement of which is the second primary objective of the survey. The DIC data collected in the NSWS will be used to quantify the contribution of inorganic carbon to alkalinity and acidity, and to calculate total anion concentration and verify pH measurements, both of which are quality-assurance measures.

The Western Survey will establish a baseline for monitoring aluminum in high altitude lakes. High levels of aluminum are considered to be a probable explanation for observed toxic effects (such as loss of fish populations) in acidified waters. A number of researchers have observed that low-pH (i.e., acidic) waters are associated with high concentrations of aluminum. Monomeric aluminum (species such as Al^{3+} and the various aluminum hydroxides) appears to be the aluminum species of concern from the standpoint of toxicity to fish, rather than total aluminum (which also includes polymeric, colloidal, extremely stable organic, and hydroxy organic complexes). By providing statistically valid characterizations of water quality, the survey will provide data useful for interpreting the complex interaction of variables such as pH and extractable (i.e., monomeric) aluminum on aquatic biota.

It is desirable to analyze (or, in the case of aluminum, extract) the samples as soon as possible because of possible sample degradation. DIC and pH can change with time as a result of chemical/biological processes within the sample and as a result of exchange of CO_2 with the atmosphere. Aluminum speciation (forms of the element) can change with time as polynuclear species are formed from monomeric species present at the time of collection (potentially causing an underestimate of the true concentration of monomeric aluminum); aluminum concentrations and speciation may also change as a result of changes in DIC, pH, and temperature, and as a result of absorbance onto container surfaces. In addition to these three parameters, filtration, aliquot preparation, and sample preservation, must be completed for the other parameters within 12 hours.

The extensive Quality Assurance (QA) approach has been defined, documented and implemented in the NSWS to provide the best possible data to support the objectives of the NSWS. Thirty percent of the total samples were blanks, duplicates, and audits. Redundant measures and checks are calculated for all primary parameters. The utility of the approach has been demonstrated in the eastern portion of the NSWS. The QA approach for the NSWS involves the following steps to ensure that adequate data are provided:

1. Standardization of sampling and analytical methods and procedures.
2. Simplification of the field operations as much as practical.
3. Thorough training of all personnel involved.
4. Use of Quality Assurance/Quality Control (QA/QC) samples and procedures to allow verification of the data.
5. Field and laboratory audits to assure that all activities are properly implemented and performed.
6. Daily QA contact with the field and laboratory activities to assure that they are properly performed and that any problems are identified and resolved.
7. Thorough evaluation of the reported data and verification of data quality.

All of these steps must be performed to assure that adequate data are provided to support the objectives of the NSWS, and ensure the quality of the data collected will not be questioned.

Alternative 2 (Ground access)

The number of lakes that could be sampled under Alternative 2 is smaller than those under Alternative 1. The exact number of lakes that could not be reached is unknown at this time, but a preliminary analysis of five wilderness areas suggests that as many as 20% of the lakes would be inaccessible by horse and some unknown number are likely to be totally inaccessible. This could lead to a serious compromise of the sampling design and failure to meet the objectives of the survey. Lakes deleted because they are inaccessible reduces the population from which conclusions can be drawn by an equal percentage. Adoption of Alternative 2 requires EPA to develop a new set of sampling protocols so that samples could be filtered and processed at the site of collection. This could not be done in time for fall 1985 sampling. The new protocols would introduce additional sources of variation that include: (1) the possibility of sample contamination during filtration and processing at the collection site, (2) increased numbers of sampling crews, and (3) more variable transport time to the field base laboratory because of differing distances and difficulties of access. An additional equivalency study of lakes would be needed in which samples would be collected from the same lakes by helicopter and by ground access so that the comparability of data from the two approaches could be ascertained. To perform these tests, and to pilot the complex logistics associated with ground crews coordinating with helicopters outside wilderness areas, a one year delay of the western survey would be necessary. Even with this additional set of studies, the data might be of less quality than required by EPA data quality objectives. The following QA problems could occur:

1. Data across sampling teams, field base stations, and subregions might not be comparable. Thus, key objectives of the NSWS might not be achieved.

2. More complicated logistics would likely reduce or eliminate the ability of the survey to provide comparable data of acceptable quality or to complete sampling of all the lakes.

3. More personnel would be involved in the sampling process and there would be a higher probability that problems would arise of data not being comparable or being of unacceptable quality.

4. Unsystematic sample contamination would be much more likely to occur as the number of sampling teams and forms of access increase. This would result in invalid data and result in key survey objectives being unfulfilled.

5. Holding times that have been established for the NSWS, and must be met, would likely be exceeded. Anyone opposed to the conclusions of the survey or subsequent regulatory actions could use the exceedence of established holding times in a court action to challenge data quality and comparability.

6. Calibrating equipment such as a Hydrolab in the field, rather than in a heated field base laboratory, would be difficult, even under the best of conditions.

If different sampling or analytical methods or means of access were used in the West, calibration of the methods with the Eastern lake survey protocols must be done. It is expected in any comparison that two different methods will not be in perfect agreement. As a consequence, there may be random or systematic bias between methods. It is then important to determine whether the differences between methods impact the characterization of chemical distributions and the confidence intervals around the values for the primary objectives.

Since Alternative 2 involves a combination of sampling methods, a calibration between these methods must be done in order to make regional extrapolations. The extent to which the two sampling methods correlate will affect the certainty associated with the regional extrapolation estimates.

These extrapolations will take the form of frequency curves. These curves are designed to predict what percent of lakes in a region are below a critical value for a certain parameter (i.e. pH 5). The NSWS data objectives focus on those values at the low end of the curve, (e.g. pH 5.0 or acid neutralizing capacity (ANC) 50 microequivalents/liter). Most wilderness lakes are expected to fall in this category. In this range even close correlations between methods can lead to significant increases in the error associated with an estimate. The higher the error, the more uncertain the estimate is.

This can be seen by considering those 2% of all lakes with either the lowest pH or ANC. The number of lakes in this category will be very important from the perspective of estimating present or potential damage from acidic deposition. If the correlation between Alternative 2 sampling methods is 0.95 (a high level of correlation), the error associated with the estimated number of lakes could be as high as 17%. If the correlation between methods decreases to 0.50, the error could rise to 205%. It is impossible to predict beforehand how close the two sampling methods will correlate. It is likely that the correlations will be between 0.95 and 0.5.

The survey objectives call for less than a 12% level of error associated with each estimate. The results of the Eastern lake survey indicate that the protocols will generate data within that error limit. Using the combined method approach in Alternative 2 could increase the error to the point where the ability of the survey to generate regional estimates would be seriously impacted.

In addition, to properly calibrate the ground sampling method, the comparison study would need to include helicopter sampling on lakes that are accessible by ground in wilderness areas. Since the values for parameters like ANC and pH are likely different in wilderness areas than outside them, it would bias the regional estimates if the comparison study were conducted outside of wilderness areas (See Appendix E.1 for further discussion).

In summary, adoption of Alternative 2 would delay the western survey one year to perform required comparability testing and pilot studies, and jeopardize the data quality. Completion of sampling an adequate number of lakes for each area needed to meet NSWS objectives would also be uncertain.

Alternative 3 (Helicopter and ground access)

Alternative 3 would differ from Alternative 2 in that every effort would be made to maintain NSWS sampling protocols. Samples from lakes accessed via horseback or on foot would be collected from inflatable boats but would then be returned to the field base laboratories within 7-8 h so that operational holding times could be met for critical parameters. Roughly 60% of the lakes could be accessed on the ground within 7-8 h (see Appendix E.4).

Quality Assurance problems discussed above for Alternative 2 would also be likely to occur for this alternative. Although the objectives of this alternative would be to maintain NSWS protocols as closely as possible, there would be greater uncertainties and possibilities for error than for Alternative 1. These would result from increased numbers of samplers, less control of sample conditions during transport, and a greater chance of not sampling the necessary number of lakes due to adverse weather conditions. Unknown sources of variation associated with differences in sampling and transport would need to be evaluated. An additional study of lakes inside and outside wilderness areas and a year delay, as described for Alternative 2, would also be needed to determine the comparability of data.

Problems of logistics would be similar to those described for Alternative 2, although fewer sampling crews and less equipment would be needed. The risk of obtaining inadequate data to meet the survey objectives is still high for this alternative because of the additional risk to data quality associated with collecting samples via horseback or foot.

Alternative 4 (No action)

The principal consequence to NSWS objectives under Alternative 4 would be that more than half of the lakes randomly selected for sampling in the West would be omitted from the study. Although a data base could be developed, it would have limited meaning because many of the most sensitive lakes in high mountain situations would not be represented (e.g., 82% of alkalinity Class 1 (the most susceptible) lakes selected are in wilderness areas; Table 4.4-1). The data could not be used to make any evaluation of the situation in wilderness areas and would be of very limited use for wilderness management. Attempts to extrapolate the data to a regional level as a basis for developing and/or evaluating possible emission control strategies would be questionable. As a consequence, sampling in the West may not be done.

CONCLUSIONS

Wilderness area lakes must be included in the western survey. The preferred means of access is using helicopters to sample all lakes (i.e., Alternative 1). The conclusions of EPA scientists are based on the findings that (1) the environmental impacts of using helicopters would be transitory and would not be significant, and (2) their use is the only alternative which will clearly result (as demonstrated by the Eastern lake survey) in the acquisition of data necessary to meet the national need for evaluating the nature and extent of acidic deposition.

Alternative 1 involves a one-time request for mechanized access to wilderness areas to carry out the survey. The following unique features of the survey should severely limit the ability of others to use the survey as precedence for justifying additional entries into the wilderness system:

- The purpose of sampling lakes in wilderness areas is to protect individual wilderness areas and the entire wilderness system from long-term damage due to acidic deposition; a problem of regional, national and international importance.

- The need for helicopter use is based on data quality and comparability, not on efficiency, convenience or economy. The survey uses peer-reviewed, state-of-the-art methods, and a unique and comprehensive QA program to ensure the completion of a data base of known high quality for regulatory decisions.

- The survey will provide information on AQRVs and establish baseline conditions for sensitive receptors in areas classified as Class 1 under the Clean Air Act. These areas include federally designated wilderness areas. This information will allow the Federal Land Manager (i.e. the FS or NPS) to carry out an affirmative responsibility under the Clean Air Act to protect these values, which include lake quality. At present, there is limited comparable data on lake damage and sensitivity for western wilderness area lakes.

- The survey will provide a statistically valid representative data base for managing individual wilderness areas and also the wilderness system as a whole.

- The survey will allow land managers to select representative lakes for continued long term monitoring of acidic deposition effects.

- Under the Acidic Precipitation Act of 1980, the Interagency Task Force on Acidic Deposition is required to present regional assessmemts on acidic deposition damage and sensitivity. The information obtained from the western portion of the NSWS will be used in a 1987 report to Congress that is also mandated by the Act.

- The difficulty of ground access for a significant number of wilderness lakes, the impact on data quality of alternative analysis methods, and the increased error that will result from using different sampling methods will seriously compromise the ability of the survey to meet its data quality objectives if either of the ground access alternatives are selected.

Tables S-1 and S-2 present summary comparisons of the four alternatives considered in this EA. Table S-1 indicates that Alternative 1 should have greater environmental impacts on wilderness areas than Alternatives 2 and 4, but all of these potential impacts are of a minor and transitory nature. Table S-2 clearly shows that only Alternative 1 provides the type of high-quality data for the most representative set of lakes with the minimum set of logistic problems that will permit the survey objectives to be obtained. A more detailed discussion of this comparison is given in Sect. 2.5.

EPA's opinion is that the data collected in the NSWS are needed for administration of wilderness areas. There is increasing evidence and concern that acidic deposition is occurring in the West. Wilderness areas, because of their location in high mountainous areas, are particularly susceptible to acidic deposition. The FS is currently conducting research on this problem, but most of its efforts are focused on specific wilderness areas. Phase I of the NSWS will provide a statistically valid data base that will enable the results of extensive studies of lakes within and outside and wilderness areas to be extrapolated to a regional perspective as well as provide information for the management of individual wilderness areas. Because the acidic deposition problem is regional in scope and origin, the only way wilderness areas can be managed for this problem is to have access to a regionally consistent and high quality data base. Clearly, the FS has a mandate under the Wilderness Act to protect wilderness resources from man-caused degradation, such as could be or is occuring from acidic deposition. The NSWS would provide a management tool to help the FS manage AQRVs.

Under requirements of the Wilderness Act [Sect. 4(c)], the FS believes that EPA must demonstrate that permission to use helicopters in wilderness areas is "necessary to meet minimum requirements for administration of the area for purposes of" wilderness. EPA concludes that the acquisition of high quality data is of paramount importance to meet the objectives of the NSWS and that the NSWS is critical to preservation and protection of long-term wilderness values. The NSWS would contribute baseline data for management of wilderness areas: (1) the wilderness system as a whole and also individual areas because of the ability to extrapolate using the NSWS design and (2) the representative sampling within individual wilderness units (e.g., Bridger-Teton, High Uintas). Use of ground access would introduce additional risks for obtaining the quality of data needed. A data set could be obtained using ground access, but it would require modification of sampling protocols, reduction of the number of lakes that could be sampled, and introduction of additional sources of variation. These problems create major uncertainties about the data to be collected using other methods for meeting survey objectives. Therefore, EPA believes the use of helicopters, a proven access mode for meeting survey objectives, is the minimum requirement for collecting data of the necessary quality.

Finally, EPA believes that helicopter operations, in this unique and one-time sampling effort, can be used to gather data on certain resources in a manner which is compatible with the preservation of the wilderness environment (Section 4(d)(2) of the Wilderness Act). The mitigation measures which EPA would undertake in protecting wilderness values and wilderness uses would include: (1) scheduling operations to avoid peak user periods; and (2) planning flight paths to avoid heavily used areas (such as trails), specific activities (such as hunting), and environmentally sensitive areas (critical habitats of threatened and endangered species.) EPA will coordinate its activities with the land managers prior to sampling each lake in order to identify the actions which should be taken in the helicopter operations.

Table S-1. Comparison of Environmental Consequences for the Alternatives

	Alternative 1 (helicopters)	Alternative 2 (horses)	Alternative 3 (horses and helicopters)	Alternative 4 (no action)
1. Wilderness Values				
o Wilderness Character				
- Long-term preservation	+[a]	+	+	-
- Precedent setting	-	0	-	0
o Wilderness solitude	-	-	-	0
o Wilderness uses				
- Hunting and other recreation	-	-	-	0
- Scientific study	+	+	+	0
2. Biota (including E/T species)	-	-	-	0
3. Human safety (probability of serious injury or death)	-	-	-	0
4. Cumulative effects	0	0	0	0

[a] "+" indicates a positive effect; "0" indicates no effect; "-" indicates a negative effect.

Table S-2. Summary Comparison of Consequences to the NSWS Primary Objectives for the Alternatives

Primary Objective	Alternative 1 (helicopter access)	Alternative 2 (horses/ foot access)	Alternative 3 horseback/foot and helicopter access)	Alternative 4 (no action)
1. Quantification of acidification status (pH) of lakes	+[a]	-[b]	-?	-
2. Quantification of susceptibility to acidification (alkalinity) of lakes	+	-[b]	-?	-
3. Characterization of lake chemistry	+	-[b]	-?	-
4. Selection of regionally representative lakes for Phase II and Phase II	+	-[b]	-?	-

[a] "+" indicates a positive effect, the expected satisfactory meeting of the NSWS primary objective; "-" indicates a negative effect, the expected failure to meet the NSWS primary orjective; "?" indicates considerable uncertainty related to quality assurance, an uncertainty that can only be resolved by the comparability studies discussed in the draft EA.

[b] Expected failure to meet the primary objective is due largely to bias resulting from deletion of most inaccessible lakes.

APPENDIX E

SUPPLEMENTARY INFORMATION AND ANALYSIS

E.1. AN EVALUATION OF THE POTENTIAL FOR TWO ALTERNATIVE METHODS OF SAMPLING/CHEMICAL ANALYSIS TO BE "SIMILAR"

In Comment #119, the FS calls for a quantification of the effects that changing sampling protocols would have. In further discussions with FS staff, the request has been restated as the need to present a quantitative analysis of how data quality would be affected if sampling protocols were changed as described for Alternatives 2 and 3. EPA has prepared the following evaluation in response to these comments.

BACKGROUND

Approximately 82% of the most potentially sensitive lakes in the Western U.S. are within wilderness areas. As such, this wilderness resource clearly represents a potentially unique one from a regulatory perspective, and one undeniably essential to making appropriate protection decisions. To exclude these areas in a Western Lake Survey would clearly bias the results of the study and result in an underestimate of low and neutralizing capacity systems. Obviously, extrapolations to the population of concern could not include the wilderness area without the samples for that area.

There is significant concern relative to allowing helicopter access to the wilderness areas of the U.S. Generally, to test "comparability" between alternative methods, paired sampling (using both methods on the same sample) is required. The issue subsequently reduces to one of calibration; it is expected in any comparison that two methods will not be in perfect agreement. Thus, calibration of one method against another allows for adjusting one data set to more closely align with the method of choice.

In the case of ground vs. helicopter sampling of lakes, (Alternative 2 or 3) a test of comparability of methods would include sampling the same lake, at approximately the same location within the lake, and at the same time by both methods. Subsequently, the data collected for any parameter is compared (using regression techniques) and the ground sampling data are adjusted as necessary so that the resultant data have a one-to-one correspondence in the final data set. All lakes not sampled by helicopter are then adjusted using the regression equation to force comparability within the limits of error associated with the computed regression equation. The adjustment to the ground data, rather than the helicopter data is done primarily because the helicopter data base is larger than the other data bases (considering East and West). It is the "limits of error" then which are of primary concern.

The reasons why alternate lakes cannot be substituted in the study which employs equally allocated sample sizes within a stratified sampling design are discussed in the Environmental Assessment. The concerns over logistics and holding times are also covered in that document. Assuming, however, that all logistics and holding times are not of concern for the purpose of this examination, a calibration test between two methods cannot exclude a population of interest. Therefore, the risk of a methods comparison which excludes a large percentage of the population of interest could result in a seriously flawed calibration test.

PURPOSE

The purpose of this evaluation is to conceptually examine the problems associated with using two methods for data collection, including collections of sample size from a large, potentially diverse population (in this case, a population of lakes), expected regional and subregional variation, and bias resulting from error, if two methods are not found to be identical. Although no data are available which actually allow direct comparisons of backpacker vs. helicopter sampling, examples of bias introduced by using calibration techniques can be developed from the Eastern Lake Survey (ELS) data set.

To use another method of field collection for acquiring lake water samples, we must be certain that both are equivalent and/or that there is a known quantitative relationship of the bias introduced by an alternative method. Only paired comparisons can be used in such a calibration approach. The ELS has paired data for examining relationships between methods of analysis for chemical parameters that serve to illustrate potential problems arising from calibration testing. These will be used as examples in this evaluation.

It is first important to recognize that since the wilderness lakes are of interest, the test cannot exclude them. These lakes may be unique and their exclusion would undoubtedly bias the results and the predictive power of the study design. The range of chemistry they represent is probably quite different than for those lakes not in the wilderness. To use data from lakes expected to be chemically similar increases the risk of failure, and as a result helicopter access to the wilderness would be required in the test.

The experiment required to calibrate the methods would need to include five assumably different subregions. (three areas of the Rockies, the Cascades, and the Sierras). Unfortunately, the appropriate number of samples for the test cannot be confidently determined at present, thus further adding to the risk.

CALIBRATION

Calibration is a technique that can be used to adjust one methodology to another. Calibration procedures commonly utilize the relationship derived from a regression analyses.

COMPARISON OF pH METHODS

The ELS assumed that in situ pH and field base lab pH were the same. Since there was considerable skepticism in the scientific community over this point, the field lab pH was identified as the method of choice. However, because there was a chance that an error could be made in the field laboratory, the in situ measurement was taken as a suitable backup. If the in situ and field lab measurements did not agree, both numbers were flagged until other checks could be performed to identify the correct value.

The r^2 values for plots of in situ vs field lab pH represent a measure of the variability explained by the relationship and are essentially equal. About 92-94% of the variability can be explained by the regression. Six to eight percent of the variability remains unexplained and contributes to the prediction error introduced if one attempts to adjust one method to the others.

Although this is an excellent r^2 (subjectively) for field data, predicting a pH for one method from the other for any single point can be grossly in error. It is not at all unlikely that backpacker vs. helicopter data would look similar. The significance of the remaining 6 to 8 percent of unexplained variability in predicting lake population below a critical pH value will be discussed in the Estimation of Bias section.

COMPARISON OF ALUMINUM METHODS

Monomeric aluminum is quantitatively related to total aluminum. Therefore, these two paired measurements are used as an example similar to that discussed in the Comparison of pH Methods.

For these parameters, a poor relationship is expected (r^2 values from .11 to .32). Monomeric aluminum is known to be affected by, at a minimum, pH and dissolved organic carbon. If these variables are added to the regression model as covariables, undoubtedly the variability explained by the model could be greatly improved. However, if the backpacker and helicopter data were similar, major errors would be introduced in the final analyses of predicting what percent of the population has aluminum concentration below or above some critical value. Unlike this example, however, we would not know what factors to introduce to the calibration to improve the predictive data adjustment power.

ESTIMATION OF BIAS

The previous examples illustrate the potential results of using two different methods. As noted earlier, the real issue is what does the variability introduced in the calibration of two methods do to the confidence of the results? The purpose of the Western Lake Survey is to characterize the population of lake chemistries. Thus, we are not as interested in the mean of the population (the average lake so to speak), but to the cumulative distribution function (CDF). The CDF is the probability of obtaining a particular value for a variable (Z) equal to or less than an observed value (see Fig. E-1.1).

Fig. E.1-1 shows the changes in a CDF diagram for various levels of measurement error. To the left of the center point (the mean of the population) lies the critical values we are most interested in, e.g., if we wanted to know how many lakes might be below a selected critical value. The point where these lines cross might be, e.g., pH 6.59 (the population mean for pH in the Northeast). If we wanted to show how many lakes are below pH 5.5, this point might be, e.g., around -1.8 on the X axis (this axis is the standard deviation from the mean). The population percentage below pH 5.5 (or -1.8 on the graph) varies significantly on the X axis (representing 0 to 100% of the population) depending on the line used to intersect the X axis. For our examples, assuming no measurement error, lines labeled A, B, C, and D apply. These lines represent the theoretical bias introduced when r^2 is 1, .99, .50, and 0, respectively.

At one standard deviation from the mean, when r^2 is .95, the absolute bias to our predictions is only .36%. At r^2 equals .50 the absolute bias is 3.5%. However, the relative bias at this point for the two r^2 values is 9.9% and 97%. The latter would seriously jeopardize the ability to predict accurately the population of lakes below the critical value. If the critical value was at -2.4 on the X axis (2.4 standard deviations from the mean), the relative bias introduced from the model error if r^2 was .95 and .50 is 17% and 205% respectively.

To assume that two field methods would compare better than an r^2 of .95 would be unwise. The data quality objectives state we would like to predict the population below critical values within 12%. For the ELS we were well within these guidelines. To add 9.9% bias due to calibration error using two different methods may be an unacceptable risk.

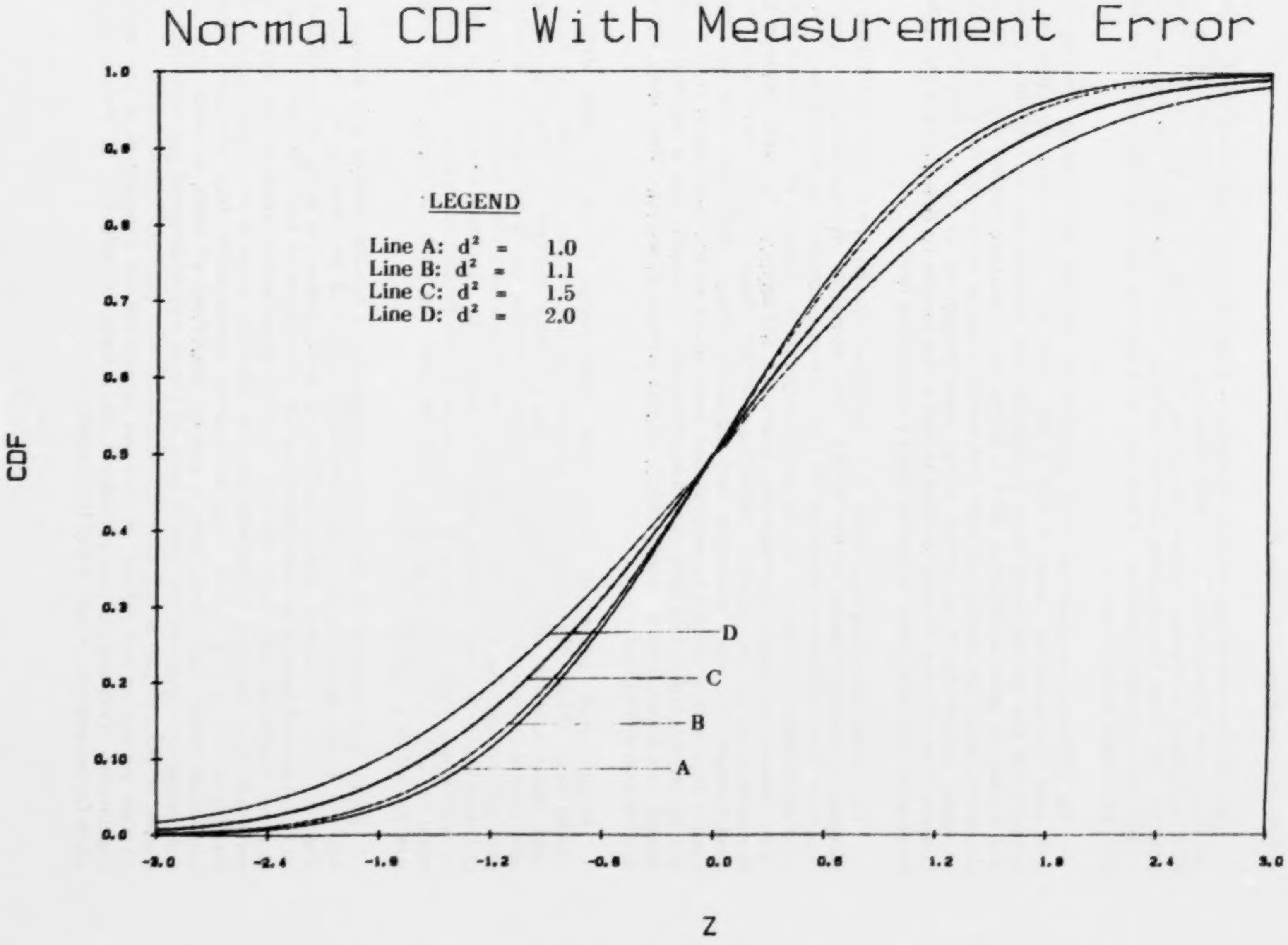


Fig. E.1-1. CDFs for Z (Normal (0,1)) with various normally distributed measurement errors.

E.2 RANDOMNESS OF SAMPLING

The FS has raised the concern (Comment #132) that the analysis in the EA "does not dispel the latent belief that lake selection was aimed at wilderness areas ...". EPA developed a random sample design as described in the EA (pp. 10 and 14) and selected the lakes for sampling without knowing the location of wilderness areas within the sampling universe. Therefore, no targeting of wilderness areas in lake selection could have occurred.

The following analysis has been prepared to describe the random process that was used for selecting lakes in the NSWS. Fig. E.2-1 has been prepared as an example for one Subregion to show graphically the relationship of alkalinity classes and wilderness area boundaries. EPA believes that if another random sample of equal size were taken, the number of lakes that would occur in wilderness areas would have an equal probability of occurring in the same proportion as in the original sample. Because it would take several months to rerun the sample to demonstrate this point, no attempt has been made to include such a re-analysis here.

The basic sampling approach is a stratified design with equal allocation of samples, randomly chosen within strata. The objective of stratification was to minimize the confidence intervals of the various estimates by maximizing use of existing information relevant to the survey objectives. Regions of the United States were defined as major physiographic provinces distinguished by both distance and characteristics of the aquatic resources. Within these regions there were two stratification criteria: subregion and alkalinity class. Sufficient existing water quality data were available to suggest that some areas within each major region have similar physiographic and land use characteristics. To ensure that a regionally valid sample was drawn from each apparently similar portion of regions, they were further divided into Subregions.

Within each subregion there were some lakes known to have different alkalinities. These alkalinities were mapped for the nation, as classes, by EPA in 1982 using existing data. They have been further refined by creating regional alkalinity maps, which depict areas of suspected similar alkalinity based on alkalinity data and related information. Alkalinity was chosen as a third major stratification criterion based on these existing alkalinity maps. The alkalinity classes were ranked in decreasing order of expected importance to the project as follows: less than or equal to 100, 101-200 and greater than 200 ueqL^{-1}. Each alkalinity class was a stratum within a subregion of a region.

From each stratum of the mapped population, a random sample was drawn. No lakes or areas within strata were specifically targeted for drawing of the sample. The fact that a relatively high proportion of lakes chosen for sampling turned out to be in wilderness areas is a consequence of the correlation of both wilderness location and low alkalinity with high altitude, remote, mountainous areas in the West. The correspondence between wilderness and low alkalinity class is illustrated graphically for Region IVD in Fig. E.2-1. Another random sample drawn from the same mapped population would very likely have a similar proportion of lakes in wilderness. An approximately equal sample size (about 50 lakes) was maintained per stratum. The nature of the sample design provided a statistically representative sample of each stratum population and allows for rigorous estimation and comparison of the various populations. This sample also provides a sound basis for selection of representative lakes for subsequent (Phase II and III) studies.

The population of lakes represented on the 1:250,000 maps, and defined as the "map population," generally represents lakes over 2 ha in size. The selected lakes were examined on larger scale maps (7.5' and 15') and identified for field visiting and sampling. Several kinds of lakes have been or will be classed as "non-target" lakes, either from the large scale maps, or at the time of field visitation. Non-target lakes include those sites that are actually not lakes, those lakes that cannot be sampled according to the established protocol, and several other similar classes. The remaining sample lakes are considered as belonging to the target population, and all descriptions apply to that population.

ORNL-DWG 85-1759

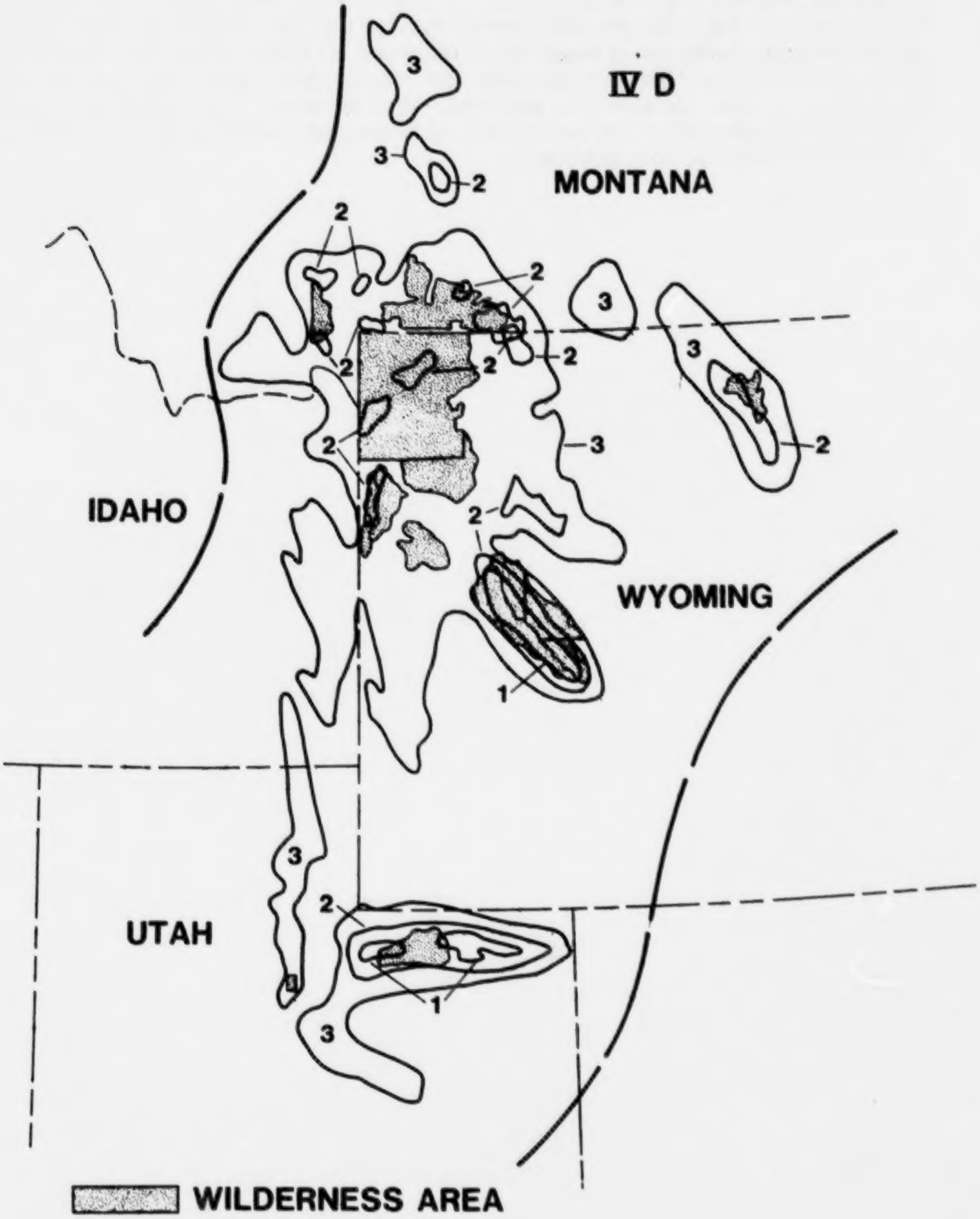

IV D
MONTANA
IDAHO
WYOMING
UTAH
3
3
2
2
2
2
3
3
2
2
2
3
2
2
2
1
3
2
1
3
WILDERNESS AREA

Fig. E.2-1. Relationship of wilderness areas and alkalinity classes in Subregion IVD.

E.3 SAMPLING SCHEDULE FOR EACH SUBREGION

EPA has evaluated existing information on lake overturn in the five subregions that would be sampled in the West. The following schedule shows the tentative schedule for sampling that is currently being used for planning the western survey. Changes may be made to this schedule as additional information becomes available during latter stages of planning.

Subregion	Sampling Window
IVA	September 23 to November 15
IVB	September 25 to November 8
IVC	September 9 to October 21
IVD	September 16 to October 20
IVE	September 16 to October 11

E.4 ACCESSIBILITY OF LAKES UNDER ALTERNATIVE 3

EPA Base Coordinators have developed additional information since the draft EA was published on the accessibility of lakes selected for sampling in the five subregions of the West. The coordinators worked with FS staff who had experience and knowledge of the specific lake locations and terrain. Accessibility was evaluated in terms of the 7 h time constraint for transporting a sample from a lake to a helicopter pick-up point as described in the EA for Alternative 3. The data obtained by the coordinators are as follows:

Western Lake Survey Accessibility of Surface Mode Wilderness Lakes

Subregion	Accessible	Not	Total	% Accessible
4A	56	48	104	53%
4B	46	28	74	62%
4C	48	32	80	60%
4D	61	43	104	58%
4E	50	20	70	71%
TOTAL	261	171	432	60%

The data show that an average of 60% of the selected lakes are accessible by horseback within the 7 h time constraint. Although the analysis was based on accessibility by horseback, the data would also reflect accessibility by foot, in most cases.

E.5 ATMOSPHERIC EMISSIONS OF HELICOPTER ENGINES

The presence of helicopters in wilderness areas would result in emissions of pollutants from their engines. Table E.5-1 gives the amount of various pollutants that would be emitted by a large turbine helicopter (e.g., Bell Huey) while idling on the lake surface for 20-minutes. Except for carbon monoxide and hydrocarbons, emission rates during climbout and approach would be higher, with total quantities dependent on the times involved. Compared to an automobile travelling at 88 Km/hr for 20 minutes, these emissions range from about 1.5 to 34 times that emitted by automobile. These values are far below pollutants produced by an average car in a year. It is expected that the emitted pollutants would be rapidly dispersed to negligible (unmeasurable) concentrations.

Table E.5-1. **Total pollutants emitted in 20 minutes by large helicopters under idling conditions.**

Pollutant	Emissions (Kg)
Carbon monoxide	4.4
Nitrogen oxides	0.13
Total hydrocarbons	1.9
Sulfur oxides	0.02
Particulates	0.016

Source: EPA. 1980. Compilation of Air Pollutant Emission Factors. 3rd Edition, AP-42.

E.6. COORDINATION AND PLANNING ACTIVITIES

As discussed in Sects. 4.1.6, 4.2.6, and 4.3.6 of the EA, EPA would plan to minimize conflicts with wilderness area users and sensitive wilderness resources under Alternatives 1, 2, and 3. Detailed plans on specific mitigative measures will be developed by EPA Base Coordinators, working closely with local staff of the FS, NPS, and other land managers.

If Alternative 1 were selected, mitigative measures would primarily be aimed at scheduling helicopter operations (1) to avoid planned activities (e.g., special hunts), heavy use periods (e.g., weekends), and sensitive resources (e.g., staging areas of whooping cranes) and (2) to route helicopter flights away from high-use areas and sensitive resources. In a few very sensitive areas where the land managers identify lakes where no helicopter access can be permitted because of a sensitive resource, elimination of lakes from the sample program will be considered to avoid disruption. Decisions to eliminate lakes would be greatly limited and would involve the NSWS statistician so that the integrity of the random sample can be maintained. Specific evaluation of any sensitive resources or uses identified would be made during planning. Training of Base Coordinators, survey teams, and helicopter crews would involve instruction on sensitivity and appreciation of wilderness values and resources and means of minimizing the effects of helicopter intrusion (e.g., the use of the "Fly Neighborly" Program).

Under Alternative 2, detailed planning by the Base Coordinator and local land managers would involve evaluating each lake to be visited, the accessibility of the lake by horse or foot, and the location of camping areas and routes to be used in moving from lake to lake within a particular wilderness. Survey crews would be instructed on procedures to follow when working in wilderness areas (e.g., removal of any waste materials, such as packaging materials or extra solutions, from the wilderness area) and on appropriate camping techniques to be used within wilderness. Crews would also receive instruction on how to interact with concerned members of the public they might encounter during their trips.

Under Alternative 3, Base Coordinators and local land managers would conduct detailed planning on the appropriate mode of access for each lake (i.e., by foot, helicopter, or horse). In general, all lakes which are more than 7 h transport time by foot or horse would be sampled by helicopter, and mitigative measures as described for Alternative 1 and in Sect. 4.1.6 of the EA would be implemented. In limited cases, lakes may be dropped from the sample if the uses or resources are considered to be too sensitive to permit helicopter sampling. For lakes within 7 h transport time, decisions whether to use horse or foot access would be made by Base Coordinators and local land managers. These decisions would be based, at least in part, on the ruggedness of the terrain, types of trails, availability of experienced personnel, and numbers of lakes to be sampled on each trip into the wilderness. Survey crews would be trained as described above for Alternative 2 and in Sect. 4.2.6 of the EA. It is probable that some decisions would be needed on using helicopters to reach some of the lakes located within the 7 h transport time limit. This situation would be a last resort, but it is probable that weather might limit ground access to at least some lakes. In such circumstances, Base Coordinators would attempt to schedule ground access at least two to three times. If none of these attempts were successful, then helicopter access would be considered. Base Coordinators would inform the local land managers about each such situation and solicit their advice on ways to limit the helicopter use.

Under Alternative 4, the only mitigative measures that would be developed would be to avoid flying helicopters over wilderness areas in any manner that would violate local restrictions on air space.

E.7 ALTERNATIVES CONSIDERED BUT NOT ANALYZED

This Appendix has been developed in response to Comment #130 from the FS. In this comment the FS identifies the following alternatives that it feels should be considered to show that EPA is concerned with protecting wilderness values: (1) changes in sample design; (2) choosing lakes close to wilderness boundaries to reduce ground transport time to a helicopter outside the wilderness; (3) limiting the chemical parameters analyzed to only those needed to identify acid lakes outside wilderness, conducting any more detailed analyses on nonwilderness lakes; and (4) sampling the most critical "short holding time" variables outside wilderness areas to accommodate wilderness values not discussed.

EPA has evaluated the possibility of changing the sampling design to limit the number of lakes that would be sampled in wilderness areas. Eliminating wilderness areas from the sample is considered unacceptable because a large proportion of the lakes most sensitive to acidic deposition are found in wilderness areas (Appendix E.2). The assessment of Alternative 4 addresses the consequences of such a change in sample design. Other approaches to limiting the number of wilderness lakes that would be sampled would result in a non-random design, which would not serve the objectives of the survey of being able to statistically estimate the number of lakes potentially sensitive to acidic deposition. EPA's proposed design includes a reasonable number of lakes to satisfy the NSWS objectives and maintain a margin for unforseen problems in sampling.

Selection of lakes close to wilderness area boundaries presents two problems. Such selection would violate the randomness of the sample and would statistically invalidate the data collected. Secondly, any such sample taken would not represent the lakes that are remote from wilderness boundaries. There is a reasonable probability that these remote lakes may be among the most sensitive lakes present, and their elimination from the sample would create a strong bias in the resulting estimates.

EPA has defined a set of chemical parameters which are considered essential in identifying sensitivity of lakes to acidic deposition and trends in acidity. Some of these parameters (e.g., monomeric aluminum) must be included because the results of detailed studies on biota conducted during Phases II and III will be extrapolated to subregions and regions. Unless these data are available for each of the Phase I lakes, the ability to regionalize the data will be limited and the data would not be representative of conditions in wilderness areas.

Sampling short holding time parameters outside wilderness areas and not within the areas presents the same problems as discussed in the preceding paragraph. High quality data on pH, monomeric aluminum, and DIC are needed to accomplish the NSWS objectives of characterizing the lakes and providing a basis for selecting regionally representative lakes for Phase I and II studies.

Also, while the Draft EA was being reviewed, a comment was received that EPA use pigeons to sample the wilderness lakes. Under this scheme, pigeons would be carried in to the wilderness and then would be used to fly the samples out. In evaluating this alternative, EPA attended a demonstration at Rattlesnake Lake, Washington on 3/1/85. During that demonstration pigeons carried 10 ml samples back to their home base. However, the sample size required for the survey is 4 liters, which is 400 times the amount of water that the pigeons could each carry. It was not felt that a pigeon could carry this sample size. To break the sample up into small enough aliquots that the pigeons could carry was also not considered feasible.

E.8 ERRATA TO DRAFT EA

p. 4	(2nd parag., 6th line). Eliminate "occurs."
p. 7	(1st parag., after list, 3rd line). Delete "of" at end of line.
p. 10	"Alternative" is misspelled on the first line of the first paragraph.
p. 16	(3rd parag.). The MIBK aluminum extraction is done on the four liter sample, not on the syringe samples, so it is not isolated from the atmosphere.
p. 21	(2nd parag., 4th line). The period should directly follow the previous word.
p. 21	(last parag., 2nd line and 5th line). Change "(DOQ)" to "(DQO)".
p. 23	(4th parag., 3rd line). Insert "that is" before "maximum"; insert after "blanks" "should be."
p. 24	(last parag., lines 5 and 6). Change the explanation in parentheses to read as follows (i.e., 60% more sampling time will be needed due to bad weather, mechanical problems, etc.)
p. 25	(last parag., 2nd line). Change USEPA 1984d to USEPA 1984f.
p. 26	(2nd parag., 3rd). Insert "(to verify the pH adjustment before addition of MIBK)" after "pH meters."
p. 27	(1st parag. last sentence). Add to the end of the sentence ", and to assess comparability with data collected by helicopters outside wilderness areas in the West."
p. 27	(4th parag., 1st sentence). Add "when possible" after "day."
p. 27	(4th parag.). Add a last sentence "Coordination of air and ground crews will be needed to pick up samples for transport to field base laboratories.
p. 29	(2nd parag., 1st line). Delete phrase "in at least some cases,".
p. 38	(Legend). Add "* indicates national parks which have both wilderness and non wilderness lakes that would be sampled; the first number indicates the total number of lakes that would be sampled in the park; the second number indicates those that are in areas designated as wilderness."
p. 41	The number of lakes for the Selway Bitterroot Wilderness should be changed from "15" to "16"
p. 45	The number of lakes for Grand Teton National Park should be changed from "2" to "3"
p. 47	(2nd parag.). Change "menziessi" to "menziesu."
p. 47	(3rd parag., 6th line). Change "crooki" to "h. columbianus". Change "Elaphus sp." to "Cervus elaphus."

p. 48 (1st parag., 4th line). Change "Haliaaetus" to "Haliaeetus."

p. 49 (2nd parag., 9th line). Change "visitor's" to "visitors'."

p. 51 (2nd parag., 4th line). Delete comma after "to."

P. 63 (3rd parag., 2nd line). Change "Huge and difficult-to-see" to "Unpredictable."

p. 65 (last parag., 5th line). Change "grow" to "gross."

p. 86 (2nd parag., last line). Change "accidential" to "accidental."

p. 91 (5th entry). Change "Steinborne" to "Steinborn."

p. 91 The following individuals should be added to the List of Preparers:

Sharon Teague, EPA, Corvallis, Oregon, Technical Assistant for the NSWS.

Dan Michaels, Radian/EPA, Washington, D.C.

Judith Troast, EPA, Washington, D.C., Office of Federal Activities.

Sharon Clarke, Northrop Services, Inc./EPA, Corvallis, Oregon, Spatial analyst.

Lee Marshall, EPA, Region 10, Seattle, Washington; Regional Coordination and Operation.

Ray McCord, Scientific Applications Inc./ORNL; data management.

p. 106 (8th entry, 2nd line). Change "Pacaific" to "Pacific."

p. xxv Make the following change and additions:
Change "U.S. Geological Service" to "U.S. Geological Survey."
Add: NEPA - National Environmental Policy Act
USC - U.S. Code.
AQRV - Air Quality Related Values.
LAC - Levels of Acceptable Change
NTSB - National Transportation Safety Board

p. A-12 The Lake designated 4B2-046 (Lake No. 2) should be removed from the Glacier Peak Wilderness. References to the number of lakes in this wilderness area should all be reduced by one (i.e., on the Washington map, p. 49, and in Table 3.2-1, p. 46). The total number of wilderness area lakes should also be reduced by one.

APPENDIX F

RESPONSIVENESS SUMMARY

F.1. LIST OF COMMENT LETTERS

The comments submitted on the draft EA included 42 letters from state and federal agencies, environmental groups, and citizens. Nearly all commenters agreed the wilderness areas should be sampled. One half of the letters (21 out of 42) strongly preferred Alternative 2 (ground access only) or Alternative 3 (combined helicopter and ground access) over Alternative 1 (helicopter access only), which is EPA's preferred alternative. The majority of those letters objecting to Alternative 1 (13 out of 21) may accept EPA's preferred alternative if additional infromation were provided (e.g., lake by lake justification). This Appendix provides a list of comment letters, copies of the letters submitted with specific comments numbered, and EPA responses to each comment.

1. State of Washington, Department of Game
2. Bridgerland Audubon Society
3. Bureau of Indian Affairs, Wind River Indian Agency
4. Bureau of Indian Affairs, Phoenix Area Office
5. Idaho Department of Fish and Game
6. State of Utah Natural Resources
7. National Audubon Society
8. State of Idaho, Department of Health and Welfare
9. Wm. A. "Bill" Worf
10. American Wilderness Alliance
11. The National Outdoor Leadership School
12. Wyoming Recreation Council
13. Environmental Testing and Balancing
14. Oregon Department of Environmental Quality
15. U.S. Fish and Wildlife Service, Helena, Montana
16. North Cascades Conservation Council
17. Sierra Club
18. The Wilderness Society
19. National Audubon Society, Rocky Mountain Regional Office
20. Gary Paull
21. Washington Wilderness Coalition
22. Denver Audubon Society
23. Sierra Club, Rocky Mountain Chapter
24. Michael Lee Wilson
25. Sierra Club, Oregon Chapter
26. State of Washington, Department of Ecology
27. Wyoming Outdoor Council
28. Bob Oset
29. Robert V. Walker
30. The Colorado Mountain Club
31. U.S. Forest Service
32. The National Park Service
33. State of Wyoming, Game and Fish Department
34. Wyoming Outfitters
35. State of California, Air Resources Board
36. Montana Audubon Council
37. Laurie Ellen Scheer
38. Dennis Austin
39. League of Women Voters, California
40. State of Wyoming, Office of the Governor and State Engineer's Office
41. State of Colorado, Division of Wildlife
42. Environmental Defense Fund

LETTER #1

Rcd 5/3/85

JACK S. WAYLAND
Director

STATE OF WASHINGTON
DEPARTMENT OF GAME
600 North Capitol Way, GJ-11 • Olympia, Washington 98504-0091 • (206) 753-5700

March 6, 1985

Wayne D. Elson
EA Project Officer, M/S443
U.S. Environmental Protection Agency
1200 Sixth Avenue
Seattle, Washington 98101

Dear Mr. Elson:

The major concern I have with the alternatives outlined in the draft environmental assessment report for the National Surface Water Survey--Western Wilderness Area Lakes is the inadequate documentation of the specific timing of the surveys. After searching through the report I finally found reference suggesting the surveys will be conducted during hunting season (page VI, second paragraph). The statement is made that helicopter visitation in the fall would "result in fewer users being affected by helicopters than during more popular hiking and camping seasons" (page VII, first paragraph). The report does not document vistor use days according to season. Given that sampling could not be done during winter when lakes are frozen, I am inclined to think that sampling during spring-early summer may result in less distrubance to recreationists than sampling during fall. If this kind of information is available it should be clearly spelled out in the report. #1

Unfortunately we do not have an estimate of the number of sportsmen that use the wilderness areas you are proposing to sample in Washington State. Albeit we do know that sportsmens use of these areas is greatest from mid-September through the end of October, excluding the first 2 weeks of October. If you decide that surveys should be conducted concurrent with fall hunting seasons I encourage you to avoid sampling during these peak periods of use. #2

Sincerely,

THE DEPARTMENT OF GAME

D. John Pierce, Manager
Big Game Investigations

DJP:cg

LETTER #2

Bridgerland
Audubon Society
P.O. BOX 3501 LOGAN, UTAH. 84321

MAR 13 1985

10 March, 1985

Wayne D. Elson
EA Project Officer, M/S 443
US EPA
1200 Sixth Ave.
Seattle, WA 98101

Dear Mr. Elson,

We appreciate the opportunity to examine the draft EA for the Western Wilderness Area Lakes - National Surface Water Survey. Our primary concern was the possibility of setting a precedent for increased helicopter activity in wilderness areas. The draft EA addressed this issue well and we see no problem.

We are also pleased to see you have included a plan to alert wilderness users to the helicopter activity. This is probably essential to avoid misunderstanding and resentment from wilderness users.

Sincerely,

Stephan D. Flint

Stephan D. Flint,
Conservation Chairman

copy: Robert M. Reed

LETTER #3

United States Department of the Interior
BUREAU OF INDIAN AFFAIRS
WIND RIVER INDIAN AGENCY
FORT WASHAKIE, WYOMING 82514

IN REPLY REFER TO:
Land Operations

MAR 1[illegible] 1985

March 14, 1985

Mr. Wayne D. Elson, EPA Project Officer, M/S 443
U.S. Environmental Protection Agency, Region X
1200 Sixth Avenue
Seattle, WA 98101

Subject: NSWS Western Wilderness Area Lakes Draft EA

Dear Mr. Elson:

As identified in the subject document, 9 lakes included in the study area are located in the Wind River Roadless Area on the Wind River Indian Reservation. Due to a misunderstanding we did not identify these lakes in our previous communications. Prior to sampling these lakes, you should contact the Joint Business Council of the Shoshone and Arapahoe Tribes to obtain their inputs and concerns.

The Wind River Indian Reservation is the home of the Shoshone and Arapahoe Tribes and their government should be consulted concerning any action contemplated to occur on, or affect, the reservation. I have provided the Tribes with a copy of the Draft EA for study. Since the Tribal government has not yet been consulted, an extension of the March 22 deadline for comments may be necessary to allow the Tribes ample time to study the Draft EA. You may contact the Tribal Government directly at: #3

Joint Business Council
Tribal Complex
Fort Washakie, WY 82514

We have no further comments about the Draft EA, but wish to have a copy of the final EA when available.

Thank you for the opportunity to comment. If you need more information, contact Charlie Dillahunty at (307) 255-8306.

Sincerely,

Superintendent

LETTER #4

UNITED STATES GOVERNMENT
memorandum

MAR 1[illegible] 1985

DATE: MAR 14 1985

REPLY TO ATTN OF: ACTING Phoenix Area Director

SUBJECT: Draft EA for National Surface Water Survey
Western Wilderness Area Lakes

TO: Wayne D. Elson
EA Project Officer, M/X 443
U.S. Environmental Protection Agency
1200 Sixth Avenue
Seattle, Washington 98101

We have reviewed the draft document (EPA 910/9-85-125). None of the proposed lakes are on Indian lands under our jurisdiction and there will apparently be no resultant impacts within our jurisdictional responsibilities.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
PHOENIX AREA OFFICE
P. O. BOX 7007
PHOENIX, ARIZONA 85011

OPTIONAL FORM NO. 10
(REV. 1-80)
GSA FPMR (41 CFR) 101-11.6
5010-114

U.S. G.P.O. 198[illegible]

LETTER #5

IDAHO DEPARTMENT OF FISH AND GAME
600 South Walnut • Box 25
Boise • Idaho • 83707

MAR 18 1985

March 15, 1985

Mr. Wayne D. Elson
EA Project Officer, MS 443
U.S. Environmental Protection Agency
1200 Sixth Avenue
Seattle, WA 98101

Re: EPA 910/9-85-125

Dear Mr. Elson:

My staff has reviewed referenced document. We believe the sampling proposed in Idaho is essential. Maintaining these pristine waters and understanding what is happening to them is very important.

We have no objection to your proposal to use helicopters to obtain the necessary samples. We would, however, recommend selecting times when visitor use is minimal to avoid "degrading" the wilderness experience of any more people than absolutely necessary. #4

Thank you for the opportunity to comment on this proposed action.

Sincerely,

Kenneth D. Norrie
for Jerry M. Conley
Director

JMC:CHN:tlv

cc: Robert Reed
Oak Ridge National Lab

• EQUAL OPPORTUNITY EMPLOYER •

LETTER #6

STATE OF UTAH
NATURAL RESOURCES
Wildlife Resources

1596 West North Temple · Salt Lake City, UT 84116 · 801-533-9333

Scott M. Matheson, Governor
Temple A. Reynolds, Executive Director
Douglas F. Day, Division Director

MAR 1 [illegible] 1985

March 13, 1985

Mr. Wayne D. Elson
EA Project Officer, M/S 443
U.S. Environmental Protection Agency
1200 Sixth Avenue
Seattle, WA 98101

Dear Mr. Elson:

We have reviewed the Draft Environmental Assessment of the National Surface Water Survey for Western Wilderness Area Lakes, and offer the following comments.

We are concerned that the overall scope of the proposed study may be too limited. Reduced to its simplest terms, the acidification potential of a lake is determined by two factors: its buffering capacity, and the occurrence of acid deposition in the watershed. We are concerned that the study may not adequately address the first factor, and the second factor not at all. #5

Considerable evidence suggests that the spring period immediately following snowmelt may be the most critical with respect to acidification. If acid deposition has occurred in an area, the spring thaw could release a "pulse" of acid water into aquatic systems. Sampling lakes in the fall will miss this critical period. The Western Lakes Pilot Survey conducted last fall in the High Uinta Wilderness (Utah) by EPA showed that 25 percent of 20 sampled lakes are very sensitive to acidification (alkalinity between 76 and 100 ueq/1), and 65 percent of the lakes are ultra-sensitive (alkalinity less than 75 ueq/1). Since the High Uinta Lakes are downwind from Salt Lake City (a non-attainable air quality area) and other industrialized areas along the Wasatch Front, the potential for springtime flushes of low-ph runoff may be high. The High Uinta Wilderness Area in Utah may prove to be the most acid-sensitive region in the nation. A comprehensive companion study to the lakes survey would be an air quality/snowpack quality survey to identify locations near wilderness areas where acid deposition is taking place. #6

With regard to the environmental concerns pertaining to helicopter use in the wilderness areas, we generally anticipate no significant impacts by this action provided that protocols are adhered to. We feel that using helicopters provides the best means to achieve the objectives of the study in a reasonable time frame. However, a few specific concerns that we have are identified below.

an equal opportunity employer · please recycle paper

1. Item 3.4, Endangered and Threatened Species, p. 48, and Item 4.1.3., Impacts to Wildlife and Threatened and Endangered Species, p. 61.

   The federally listed endangered whooping crane (Grus americana) is mentioned in the narrative of both sections relative only to the area near Gray's Lake, Idaho. We would point out that whooping cranes are occasionally observed among sandhill cranes migrating from Gray's Lake National Wildlife Refuge (Idaho) to Bosque del Apache Refuge (New Mexico) from about September 20 to October 10, over the Uinta Mountains Wilderness Area in Utah. The cranes fly at relatively low altitudes, typically in flocks of 10 to 50 birds. Although most of the cranes migrating through Utah are sandhills, whooping cranes are also observed. Migrating cranes are seldom encountered west of the Yellowstone River drainage in Utah, but are particularly common in the Whiterocks River, Ashley Creek, Sheep Creek, and Carter Creek drainages. Disturbance of, and even collision with, cranes is a possibility, so helicopter pilots should be aware of this potential problem. #7

2. Item 4.1.2, Impacts to Recreation: Hunting, p. 60.

   We do not feel the issue of hunter-helicopter conflicts was adequately considered in the Environmental Assessment. While it may be true that some types of hunting (e.g. for certain species) may not be wilderness-dependent activities, a hunter's choosing to hunt in a wilderness area reinforces the argument that he desires a high quality experience with minimal chance of outside interference. Although we do not oppose the use of helicopters for the sampling effort, we feel that a protocol needs to be established to deal with hunter-helicopter conflicts. We suggest that flying high above the terrain on approaches to lakes, avoiding observed big game animals and hunters, and staying away from known trails and campsites will go a long way toward alleviating this potential problem. We also recommend that sampling be discontinued on weekends from September 14 through October 13, 1985, to minimize interactions with hunters. #8

3. Item 1.5, Alternatives and Issues Considered But not Analyzed, p. 8-9.

   The issue of spring vs. fall sampling should be reanalyzed. If acid deposition has occurred in an area, spring snowmelt may flush large amounts of low pH water into aquatic systems. The acid "pulse" so produced may exceed the buffering capacity of a #9

lake at that time, with aquatic communities affected as the result. As mentioned before, this is perhaps the critical time for determining the true acidification potential of many of Utah's high mountain lakes. We feel the benefits to be gained from information collected in the springtime would far outweigh the potential impacts on nesting and calving wildlife in the spring-summer period. #9 (CONT

We appreciate the opportunity to comment on the Draft Environmental Assessment. Please provide us with a copy of the final assessment. We also request that EPA contact the Division of Wildlife Resources prior to sampling so that we may coordinate our activities. If we can assist your project further in any way, please contact us accordingly.

Sincerely,

William H. Geer, Director
DIVISION OF WILDLIFE RESOURCES

cc: Oak Ridge National Laboratory - Robert Reed

LETTER #7

MAR 18 1985

National Audubon Society
Western Regional Office
555 AUDUBON PLACE, SACRAMENTO, CA 95825 (916) 481-5332

March 15, 1985

Mr. Wayne D. Elson
EA Project Officer, M/S 443
U.S. Environmental Protection Agency
1200 Sixth Avenue
Seattle, WA 98101

Dear Mr. Elson:

Thank you for the opportunity to review and evaluate the Environmental Assessment for the National Surface Water Survey, Western Wilderness Area Lakes. Our interests in your proposed survey are the lakes located in wilderness areas in the states of California, Oregon, and Washington.

The National Audubon Society is deeply concerned with the nationwide threat to fish and wildlife posed by acid rain. Therefore, we support strongly your agency's work to develop a scientifically accurate assessment of acid rain impacts on a wide range of waters throughout the United States.

We view your effort as being important both nationally and regionally. It is our belief that the impacts of acid rain are already occurring in the Western United States to an extent largely misunderstood by the general public. If, as we fear, this study demonstrates considerable damage has already occurred or is likely to occur, then hopefully the acid rain issue will truly be perceived as a national environmental concern.

While we strongly support the goals and objectives of this study we are concerned with the heavy reliance on helicopters for data gathering in the preferred alternative. We understand that administrative provisions exist for allowing the use of motorized vehicles in wilderness areas for specific purposes. However, we are troubled with the possibilities that this program with its worthy goals could be cited as a precedent for future programs which may not be in the interest of maintaining a healthy and productive wilderness resource. #10

Mr. Wayne D. Elson
March 15, 1985
Page 2

We urge the EPA to proceed by using the least obtrusive method of access which meets all scientific objectives of this important study. Selection of the helicopter alternative should be made only on the basis of scientific need. Convenience or economy are not adequate reasons to select this alternative. #10 (cont)

It is our understanding that a comprehensive proposal to access the lakes by ground is being prepared by the National Outdoor Leadership School in Wyoming. Please consider this and similar proposals carefully in choosing your method of access. #11

It is not our position to oppose this study strictly on the question of access. However, in keeping with the intent of the Wilderness Act, it is clear non-motorized access should be chosen if such methods are suitable and available. #12

If it is determined that helicopter access is the only method available, we would urge you to coordinate the visits to minimize conflicts with wildlife and recreational users of wilderness areas. Helicopter visits should be scheduled to avoid breeding periods by wildlife species such as the Bald Eagle, Peregrine Falcon, migratory waterfowl, and big game. #13

We would also urge caution in the operation of aircraft and the management of fuel and reagents while in the vicinity of the sample lakes. Ecologically fragile wilderness waters, slow to recover from disturbance, deserve your great care in implementation of the study. #14

Under no circumstances should our reluctant acceptance of helicopter use as a final alternative be seen as a change in our general belief about motorized activities in wilderness areas. We view this proposal as a one-time exception, limited in scope and necessary for the long-term health of our wilderness resource.

Thank you for your consideration of our views. We look forward to following with interest the progress of this important study.

Sincerely,

DANIEL TAYLOR
Regional Representative

DT/er

LETTER #8

STATE OF IDAHO
DEPARTMENT OF HEALTH
AND WELFARE

DIVISION OF ENVIRONMENT
Statehouse
Boise, Idaho 83720

MAR 20 1985

March 15, 1985

Ronald A. Lee
Environmental Evaluation Branch
U.S. Environmental Protection Agency
1200 Sixth Avenue
Seattle, WA 98101

Dear Mr. Lee:

Thank you for the opportunity to comment on the National Surface Water Survey Environmental Assessment for Western Wilderness Area Lakes. The Division of Environment concurs with EPA's selected alternative which employs helicopters as the means of access to wilderness area lakes. Given: 1) the data quality requirements to meet the project objectives, 2) the fastidious logistics involved in conducting field activities, and 3) the relative low and transitory anticipated environmental impacts, helicopter use appears to be the only feasible means of conducting the study.

Please keep us informed as you finalize this assessment and begin work on the project.

Sincerely,

Lee W. Stokes, Ph.D.
Administrator

LWS:par

cc: Susan Martin
Gwen Burr

LETTER #9

Wm. A. "Bill" Worf
Environmental Consultant

585 Kootenai Cr. Rd.
~~Rte. 2 - Box 1061~~
Stevensville, Mont. 59870
U.S.A.

Phone (406) 777-5450

MAR 20 1985

March 18 1985

Wayne D. Elson
EA Project Officer, M/s 443
US Environmental Protecion Agency
1200 Sixth Avenue
Seattle, WA 98101

Dear Mr. Elson,

This is to comment on your draft Environmental Assessment on the National Surface Water Survey of Western Wilderness Lakes. Following are my credentials for these comments.

- I've served since 1978 as an active member of the Commission On Ecology for the International Union for the Conservation of Nature (IUCN). COE recognises acid deposition as one of the most urgent of global environmental issues.

- I was closely involved in the developement and administration of Forest Service wilderness management policies from Sept. 1964 through 1981. I served on a special task force immediately after the Wilderness Act passed to make a first draft of the implementing regulations and policy. I headed the Forest Service wilderness Progam from 1965 to 1969. During that time most of the policies now governing administration of National Forest Wildernesses were developed. From 1969 through 1981 I headed the Recreation, Wilderness and Lands Progams in the Forest Service Northern Region.

- Nearly 31 years as a Forest Service officer. This involved extensive experince in organizing and implementing back country projects using pack stock to meet difficult logistic problems.

- I've been on at least one overnight horse or back-pack trip in 28 of the Wildernesses you propose to sample. These include numerous horse pack trips lasting from 3-14 days in two of them - the High Uintas in Utah and the Bridger in Wyoming.

Following are my comments on the draft EA.

Is there a legal basis for conducting the NSWS within the Wilderness System?

Absolutely! Section 4(d)(2) says "*Nothing in this Act shall prevent within national forest wilderness areas any activity, including prospecting, for the purpose of gathering information about mineral or other resources, if such activity is carried on in a manner compatible with the preservation of the wilderness environment.*" NSWS is clearly allowed under this provision, as are wildlife studies, entomological surveys, soil surveys, forage studies, etc. It should be noted, however, that work done under this provision must be conducted in a manner compatible with the preservation of the wilderness environment. Section 4(c) makes it clear that the use of helicopters is not compatible. #15

Does the Chief of the Forest Service have legal authority to approve the landing of aircraft for the NSWS?

Maybe! Sec. 4(c) permits the approval of aircraft landings, structures, installations, #16 temporary roads, and the use of motor vehicles, motorized equipment, motorboats, or other forms of mechanical transport if they are "... *necessary to meet the minimum requirements for administration of the area for the purposes of this Act...* " The first question - is NSWS a "*minimum requirement*" to meet a purpose of the Wilderness Act"? If the answer is yes we must ask - is the helicopter really "*necessary*"? I'll try to answer both of these questions later. #16 (CONTD)

Does the EA adequately treat wilderness?

No! A number of authors and individuals are quoted and referenced, however the way this material was assembled missed key points. This is not surprising since none of the Preparers listed on pages 90 and 91 indicate experties in this very complex subject. Following are comments concerning my most important concerns: #17

1. The document fails to identify the purpose for which the Wilderness System was established. In the Summary on top of page v it is noted that wildernesses are to be devoted to the "*public purposes of recreation, scenic, scientific, educational, conservation, and historical use.*" The draft alludes to this phrase in several other places and seems to imply that these are the purposes for the Wilderness Act. In actuality these are uses recognized as consistent with wilderness. The purpose the Act was passed is simply "... *to assure that an increasing population, accompanied by expanding settlement and growing mechanization, does not occupy and modify all areas within the United States...*" #18

2. The draft fails to recognize the wilderness resource. Even though the words are used on page 33, the authors apparently missed the significance. It was not even listed as a value when assessing environmental impacts (Pages v, 32, 49, 71, 85 & 87) The values referred to on these pages are primarily those associated with one use - recreation. The Act declared a national policy "... *to secure for the American people of present and future generation the benefits of an enduring resource of wilderness.*" The wilderness resource once covered the entire continent. It is an aura of wildness, a lack of evidence of modern man, an absence of man caused noise or smells and a freely functioning ecology. It is analogous to other resources like water. Water can be fished in, swum in, boated on, drunk, bathed in, used for irrigation, etc. The wilderness resource can be hiked in, fished in and hunted in. It can also be used as place to study nature and natural processes and the mere fact of it's existance can enhance peoples non-wilderness outdoor experinces. Individual users and uses can be effected by a specific activity such as the sound of a power saw or the landing of an aircraft. These have a temporay effect on the wilderness resource also but a much more significant effect on the wilderness resource is the policy decision that determines whether or not to permit such activity to occur. It will determine the quality of the resource we pass on to future generations. The illegal landing of a helicopter in a remote wilderness to poach a Bighorn ram would have a much smaller impact on the wilderness resource than the decision to use a helicopter for administrative purposes if such use is not truely "*necessary*" #19

3. The draft gives good recognition that wildernesses serve as natural museums but makes only passing mention (on bottom of page 32) of one of wildernesses most important values - that of serving as a cultural museum not unlike Colonial Williamsburg in Virginia. Aldo Leopold said "*The day is almost upon us when a pack must wind it's way up a graveled highway and turn out it's bell mare in the pasture of a summer hotel. When that day comes the pack train will be dead, the diamond hitch will be merely a rope, and Kit Carson and Jim Bridger will be names in a history lesson.*" Partly because of Aldo Leopolds vision we now have a wilderness System where each year tens of thousands of Americans (recreationists, Forest Service officers, scientists, livestock #20

people, outfitters, prospectors and students) are traveling, living and working **the old fashioned way.** They are keeping alive the pack train, diamond hitch, cross-cut-saw and many primitive skills from Americas' heritage. These users also gain in the process by demonstrating to themselves that they are not weaker or less resourceful than their forebearers. EPA could make a significant positive contribution to this value. #20 (CONTD)

4. There is considerable reference in the draft to the Acts' provision that wildernesses are "...*for the use and enjoyment of the American people...*". We need also to emphasize five words that also appear twice in Sec. 2(a) of the Act - "...*use and enjoyment as wilderness...*". The meaning and significance of these words relate very closely to the three preceding comments. Wildernesses are not to be used as recreation areas, widlife management areas, research areas, etc. They are to be used as WILDERNESS. Uses of the recreation, wildlife and scientific values may occur as long as the use does not erode the wilderness resource. The NSWS survey crews will be wilderness users and will be enjoying the benefits of the wilderness resource. #21

Following are additional questions or concerns about the findings or conclusions of the draft.

1. On page xii, it is estimated that 20% of the selected lakes are inaccessible by horse. I certainly don't know all the lakes selected but my general knowledge of 28 wildernesses and experience with horses tells me that figure is much to high. In any event it seems that EPA could randomly select alternate lakes that would be accessible by horse without seriously effecting the objectivity of the study. #22

2. The draft concludes that maximum sample holding times wuld likely be exceeded under alternative 2. I would wager a large sum that I could personally ride out to a trail head in under 7 hours from any lake accessible by horse in either the Bridger or High Uinta Wildernesses. This would be done safely and with a sample. There are local people better qualified to do it than I. My general knowledge of the wildernesses and experience with horses together with discussions with outfitters, guides, and others familiar with the situation convinces me that the required times can be met for most if not all of the lakes accessible by horse. #23

3. The estimated cost of Alt. 2 ($7,000,000) is grossly inflated. With 60 crews, each crew would have to sample only an average of 8.3 lakes. Some lakes are very close to the boundary and in some instances more than one lake could be sampled from a single camp. It seems that if we allow an average of three crew days per lake (25 days total per crew) they would be able to do their work and still have time to do a lot of fishing. I don't know the cost of the sampling equipment but $1,000 should be a generous estimate of the cost of putting a 4 person crew in the field with horses. In many cases the sampling team and the courier could hike using pack animals to carry sampling and camp equipment. This would save expense, problems and time. #24

4. There is no indication in the draft that any contact was made with any outfitter or guide while evaluating Alt 2. Serving most wildernesses you will find a group of professionals in the art of meeting difficult logistical problems by horse or mule. #25

5. The draft indicates the impacts of helicopter use are all very short-term. It plays down the significance of precident. Yet EPA is using precident as an arguement supporting this request (page 49). The decision by the Chief of the Forest Service regarding this request will reverberate throughout the Wilderness System for years to come like the "*shot heard around the world*". The same provision which permits the Chief to grant permission to land aircraft also allows him to permit motorized equipment, temporary roads, mechanical transport, motorboats, structures and installations. Over the past 21 years there have been literally hundreds of requests under that administrative provision ranging from a bulldozers to maintain existing dams to telephone repeaters to helicopters for grizzly bear studies to a Defense Department activity that was so secret they wouldn't tell us what it was. Even as I write there is a group of scientists in Colorado writing a justification for the installation of a network of electronic instruments to help predict flooding in the Colorado River Basin and a Forest Supervisor in Wyoming recommending the helicopter installation of Grizzly proof caches. The proponents all stress the temporary nature of the activity or that it will be done when few people are around or it's extreme importance to wilderness or it's importance to some public program that really is much more important then wilderness. #26 #26 (CONTD)

6. Related to 5, the draft assures us that the pending stream survey - phase I - will not require the use of helicopters. How does the study differ so that this is possible? Or would that change once permission to use copters in the lake survey is obtained? #27

7. The "public involvement" proposed on page 64 is really "hard sell"! #28

8. The statement regarding proposed training of the NSWS crews on page24 indicates a lack of sensitivity to wilderness. Regardless of which access alternative is eventually employed all personnel should receive intensive training on the importance and value of the wilderness recource. #29

Is the NSWS a "minimum requirement" for meeting the purpose of the Wilderness Act?

The evidence presented in the draft does not prove that it is. Surely the data gathered in the wildernesses will help the NSWS but if the Nation undertakes programs that prevents damage from acid deposition to lands and waters surrounding the wildernesses the wilderness waters should also be pretty safe. #30

Is helicopter access truely "necessary" to completing the NSWS in Wilderness lakes?

No! Even if the NSWS is found to be a "minimum requirement" for wilderness purposes, it can be accomplished to an adequate standard by use of horses and mules. #31

Conclusions.

1. EPA should complete the NSWS for wilderness lakes.
2. The survey should be done without the use of helicopter access in wilderness.
3. Recognizing that virtually no planning toward implementing Alternative 2, it may not be possible to complete the survey in 1985. If so the program should be postponed a year.

Thank you for the opportunity to comment. If EPA needs assistance in planning for horse access or in training of field crews on the importance and meaning of wilderness, I would be available on a time and expense basis.

Sincerely

William A. Worf

LETTER #10

MAR 26 1985

American Wilderness Alliance
7600 East Arapahoe Road/Suite 114/Englewood, CO 80112/(303) 771-0380

BOARD OF TRUSTEES
Sally A. Ranney
W Mitchell
Nancy J. Barra
Dr Bernard Shanks

ADVISORY COUNCIL
Dr John Craighead
L.W. (Bill) Lane, Jr
Francois G. Leydet
Martin Litton
Margaret Wentworth Owings
Eliot Porter
James A. Posewitz
Dr Wallace Stegner

EXECUTIVE DIRECTOR
Clifton R. Merritt

EDITORIAL OFFICES
Wild America
7600 East Arapahoe Road/Suite 114
Englewood, CO 80112

Working Together To
Conserve Wild America

March 14, 1985

Mr. Ronald A. Lee, Acting Chief
Environmental Evaluation Branch
Environmental Protection Agency
1200 Sixth Avenue
Seattle, WA 98101

Attention of: M/S 443

Dear Mr. Lee:

This is in regard to your agency's Environmental Assessment for the western lakes portion of your national acid rain water survey.

Please make this statement a part of the official record on the subject matter.

The American Wilderness Alliance is a western-based national non-profit organization whose members are working to conserve the nation's decreasing publicly owned wildlands, wildlife habitat and free-flowing river resources. We have members in all 50 states, but a little over half of them are located in the western states.

We have also been heavily involved in working with the U.S. Forest Service and other wilderness resource agencies in the proper management of established wilderness areas.

We note that you are proposing to use helicopters to take water samples from lakes in wilderness areas in connection with the acid rain survey.

We strongly support your agency in obtaining these needed data. But we respectfully request that you find non-mechanized means to get them.

Yours is not the only agency, firm or individual proposing to use motorized vehicles or mechanical transport within America's statutorily designated wilderness areas.

The use of helicopters on such a large scale as proposed by the EPA would set an extremely bad precedent. As you know, the 1984 Wilderness Act prohibits use of motorized vehicles and mechanized transport in established wilderness areas, except in a few restricted instances. If such use of helicopters by the EPA takes place, all the other agencies (federal and state), firms, and individuals now proposing motorized vehiclular use in established

Mr. Ronald A. Lee
March 14, 1985
Page 2

wilderness areas will be clamoring for similar consideration and use. How shall one be allowed and the others denied? The flood gate would be opened—and a wilderness designation under federal law would become meaningless.

It is not so difficult to decide whether a proposal to use motorized vehicles is in the interest of the wilderness. But with the pressures of several agencies, firms and individuals, this line of decision can quickly become fuzzy or be eliminated altogether by political intervention.

For example, weather modification agencies and forecasters are even now demanding widespread use of established national forest wilderness for their motorized snowcats, snowmobiles and the development of permanent structures. These sources can exert powerful political pressures on the wilderness resource agencies to allow such non-conforming uses. #34 (contd)

Again, officials of some state wildlife departments have continued their demands over the years that they be allowed to use snowmobiles to census and manage wildlife, such as big-game herds. Is this in the interest of the wilderness?

From just these two situations, I hope that EPA officials can see the problems they are creating with their plan to use helicopters in designated wilderness areas.

Wilderness areas are not primarily recreation areas. Recreation is only one type of public use or purpose for wilderness. But wilderness recreation requires solitude and freedom from man-made structures or other developments and motorized vehicles. Other public uses or purposes, as noted in the parent Wilderness Act, are scenic, scientific, educational, conservation and historical. #35

Some EPA officials have indicated that since the helicopter flights would take place within a relatively short period (approximately one month) in the fall, few if any wilderness visitors would be in the areas. Thus, according to their thinking, the planned overflights and landings should not be objectionable. #36

This thinking not only misses the point as to why we have and must protect wilderness as inviolate, but it also overlooks the fact that in the fall many hunters and other visitors do indeed use our wilderness areas. They would have their quality wilderness experience violated and spoiled by the presence of motorized equipment.

Moreover, we seriously question the "need" to use helicopters in the first place. No high mountain lakes in Forest Service Region 2 #37

Mr. Ronald A. Lee
March 14, 1985
Page 3

are more than a day's (12 hours) travel, round trip, by horseback and packstock from the edge of the wilderness and road-ends or possible landing fields outside the wilderness. Most of them would involve much less time. I have worked with saddle and packstock virtually all my life on ranches and in wilderness areas and know what can be accomplished by these means.

By using the services of outfitters and guides, you would have experienced horsemen and packers who are familiar with the areas and could expedite getting your technician and equipment into the lakes, taking the samples, and bringing them out. According to the EPA information I have, this should require a total of only two saddle horses and a packhorse for the outfitter, technician and equipment. Use of horses and packstock would cut the time to half or less over foot travel and greatly facilitate transporting rubber raft and water testing equipment. #37 (contd)

There would probably be extremely few, if any, lakes that the experienced outfitters couldn't get into and out of expeditiously. Finally, the cost of the survey would be greatly reduced.

It should be emphasized that the Wilderness Act authorizes the use of outfitters and guides—and their use is in harmony with the wilderness philosophy and concept. As a matter of fact, outfitting and guiding is the only commercial conforming use allowed under the Wilderness Act in established wilderness areas. Accordingly, the American Wilderness Alliance would have no objection to the use of outfitters for your water survey. Indeed, we would support it. #38

The outfitting and guiding industry maintains associations of their outfitters on a statewide basis, and I believe their officials would be pleased to help you expedite this important water study.

Accordingly, the American Wilderness Alliance strongly objects to the use of helicopters for the EPA water survey and strongly supports outfitted saddle horse and packstock use for this study.

Would you please let us hear from you soon on this matter?

Sincerely,

Clifton R. Merritt

Clifton R. Merritt
Executive Director

cc—EPA: Colorado, Idaho, Montana, Oregon, Wyoming

LETTER #11

The National Outdoor Leadership School

MAR 21 1985

March 19, 1985

Dr. Bernard Goldstein
Assist. Adm. for Research & Dev.
U. S. Environmental Protection Agency
401 M. Street S. W.
Washington, DC 20460

Dear Dr. Goldstein:

Enclosed please find a proposal from the National Outdoor Leadership School (NOLS) to the Environmental Protection Agency for the NSWS sampling of Western Wilderness Lakes.

There are four alternatives discussed in the proposal, all detailing different levels of NOLS involvement in the study. I am convinced that foot access is a viable alternative for the sampling of Western Wilderness Lakes, and hope that you will give it due consideration. #39

I look forward to your response regarding this proposal. I will be leaving town beginning the week of March 25 for several weeks. All communications should be directed to Steven Forrest listed on the proposal cover.

Sincerely,

Jonathan Kusel

Jonathan Kusel
Special Projects Director

Enc.

cc: C. Riordan
J. Huang
L. E. Coate
W. D. Elson
R. Lee
L. Svoboda
R. M. Reed
R. Linthurst
D. Landers

Jim Ratz
Executive Director

P.O. Box AA
Lander, Wyoming 82520
307-332-6973

NOLS is a nonprofit educational corporation

A PROPOSAL TO THE ENVIRONMENTAL PROTECTION AGENCY FOR THE NATIONAL SURFACE WATER SURVEY: NON-MOTORIZED LOGISTICAL SUPPORT FOR SAMPLING WESTERN WILDERNESS LAKES

12 MARCH 1985

NATIONAL OUTDOOR LEADERSHIP SCHOOL

BOX AA
LANDER, WYOMING 82520

RESPOND TO:

JONATHAN P. KUSEL
SPECIAL PROJECTS DIRECTOR
BOX AA
LANDER, WYOMING 82520
307-332-6973 Ext. 77

STEVE FORREST
BOX 3759
JACKSON, WYOMING 83001
307-733-9625
307-733-6856

A PROPOSAL TO THE ENVIRONMENTAL PROTECTION AGENCY, NATIONAL SURFACE WATER SURVEY: NONMOTORIZED LOGISTICAL SUPPORT FOR SAMPLING WESTERN WILDERNESS AREAS

INTRODUCTION

In 1983, the Environmental Protection Agency (EPA), Office of Research and Development, initiated a national effort to establish baseline data on acid deposition, the National Surface Water Survey (NSWS). EPA issued a Draft Environmental Assessment (EPA-910/9-85-125) on the NSWS of Western Wilderness Area Lakes on 1 March 1985. In the Assessment, EPA considers four alternatives in terms of potential environmental impacts on the existing wilderness and potential effects upon the objectives of the NSWS, and that Alternative 1 (all wilderness lakes sampled by helicopter) is the preferred alternative.

Discussion with EPA officials and reports in the Jackson Hole Guide, 3-7-85, 2-28-85, Denver Post, 2-24-85, and San Francisco Chronicle, 2-12-84 indicate that if helicopters are not granted access to wilderness lakes by the US Forest Service, the NSWS study will be postponed until 1986 and possibly not undertaken at all.

Because of the urgent need for baseline data, this proposal discusses four alternatives to motorized sampling within wilderness area boundaries and offers the assistance of the National Outdoor Leadership School (NOLS), a non-profit outdoor educational institution, to provide planning and logistical support for this program.

PROBLEM STATEMENT

Although objectives of the overall EPA study are almost universally embraced, the USFS is currently denying helicopter access to survey wilderness lakes since motorized access is clearly not in keeping with the spirit and intent of the Wilderness Act. As noted in the EA, the Wilderness Act [PL 88-577 Sect. 4(c)] and the FS Recreation Manual (USDA undated, Sect. 2323.9), allow for authorized aircraft use

> to meet minimum requirements for protection and administration of the area to meet the purposes of the act, for bona fide emergencies involving the health and safety of persons within the area. The use of equipment, structures, or activities listed above may be approved also: (1) [When] either an administrative or a cooperative activity essential to the management of the wilderness cannot reasonably be accomplished with primitive methods or by nonmechanical means. In determination of what is reasonable, there must be a showing that the need is based upon more then efficiency, convenience, and economy...(emphasis added)

There is considerable question by the FS and concerned outside groups regarding the EPA position that the study cannot be reasonably accomplished by nonmechanical means. A failure to resolve this issue in a timely manner could result in postponement or cancellation of the survey within the wilderness system. Since many potentially sensitive lakes occur inside wilderness boundaries, and because baseline data is urgently needed in some cases, postponement or deletion of sampling within the wilderness system may only create data voids which ultimately could prove detrimental to management and maintenance of wilderness values.

OBJECTIVE

This proposal provides a means to avoid potential mission conflicts between the NSWS and USFS execution of the Wilderness Act. NOLS will supply logistical and ground support for nonmotorized sampling of western wilderness areas while maintaining the integrity and consistency of the sampling effort.

We propose that the National Outdoor Leadership School, a non-profit outdoor educational institution based in Lander, Wyoming, provide such support necessary to insure completion of the NSWS within wilderness areas in nine western states within the 1985 time frame.

BACKGROUND

The National Outdoor Leadership School was established in 1965 and offers international programs in all areas of outdoor education. The school conducts nearly one hundred and fifty courses annually in seven western states, Alaska, Mexico and Africa, maintaining branch schools in Wyoming and Washington in the west. NOLS maintains its own transportation staff and horsepacking outfitters, and is currently permitted to outfit in over seventeen National Forests and numerous National Parks and Monuments. Instructors are highly trained in wilderness travel and mountaineering and are responsible for rationing, backcountry emergency medical care and teaching technical and non-technical wilderness skills to over 1600 students throughout the year on courses ranging from two weeks to three months. The consistent record of excellence in teaching outdoor skills and safety in the wilderness has given NOLS the reputation of one of the finest outdoor schools ("NOLS, the Harvard of Wilderness Schools," Money Magazine, 1977, See Appendix I and II).

Alternative 2 of the EA (use of ground access only) did not closely examine the use of foot access, stating in Sect. 1.5 that this alternative "...has not been fully evaluated in the EA...", and much of the relevant discussion involves the impacts of only horse-led sampling efforts. NOLS experience suggests that distances indicated in Table 4.2-1 of the EA as "probable" (0-14 miles) can be traveled easily by a runner on foot from a sampled lake to a trailhead or an aerial pickup point outside the wilderness boundary within NSWS time constraints. Longer distances would require close examination of the terrain traveled to determine whether a runner can meet the NSWS deadline of seven hours from

sampling time to helicopter pickup, and if horse transport or a combination of runner and horse transport of a sample is necessary.

DESCRIPTION OF SERVICES

Four alternative levels of service provided by NOLS based on the above considerations are suggested:

Alternative 1

NOLS plans and manages all logistics for the western region sampling of wilderness lands. NOLS organizes and supplies 25 field study teams, five per mobile lab unit, consisting of two NOLS instructors and four qualified graduates of NOLS backpacking expeditions. They will escort two EPA technicians--who must be physically prepared for demanding field conditions (NOLS will outfit)--into wilderness lakes, carrying all study equipment in backpacks. EPA technicians will collect samples that will be carried by runners to the nearest helicopter landing area beyond the wilderness boundary. Runners will return to the group or be replaced by two others (to carry study equipment) if the runners are traveling from lakes lying deep within wilderness boundaries. Samples gathered at distant lakes may require horse transport and possibly a combination of foot and horse transport to insure the seven hour lake to helicopter transport time is met. NOLS will coordinate all of these efforts, and coordinate helicopter pickups of samples. NOLS field logistic protocols and radios, either employing FS repeating stations, or radiotelephones which require no direct line of sight to communicate, will be used to maintain precise coordination with sample transport and helicopter pickup. NOLS vehicles and contracted helicopters will be used to transport study teams to optimium wilderness entry points to access study lakes. NOLS will coordinate this effort. The budget included with this proposal is for our preferred Alternative 1. The budget does not include any sampling equipment or field radios supplied by the EPA, and we feel the budget is accurate with our present understanding of the testing procedure detailed in the EA and the Methods Manual for the National Surface Water Survey Project-Phase 1, EPA, Las Vegas, Nevada, contract no. 68-03-3050.

Alternative 2

Alternative 2 is identical to Alternative 1 except that NOLS staff will complete field sampling, and no EPA technicians will accompany study teams. With proper training, familiarity with sampling methods and potential sources of error, NOLS field staff can accurately carry out required field testing (personal communication, Dr. Charles Driscoll and Dr. Chris Kronen--University of Maine), and transport samples as described in ALternative 1. The budget contained herein would be roughly the same, with a small reduction in field equipment and rations costs, and include an increase for training NOLS staff (Both Drs. Driscoll and Kronen stated that Post-doctoral and Doctorate candidates could be made available in August for training NOLS field personnel).

Alternative 3

NOLS instructors will accompany sampling teams to coordinate field activities, providing backcountry expertise and safety assistance. NOLS will not be involved with the planning and logistics, except in the field, and then only as dictated by EPA coordinators. This is a minimum NOLS involvement in the NSWS effort and will cost only Instructor time and travel expenses, plus a minimal administrative fee for contracting NOLS Instructors.

Alternative 4

NOLS trains individuals who will be working in the field on the NSWS. Field workers will travel to NOLS Wyoming for training in backcountry travel, camping and safety. This alternative is possible on a space and permit availability only, and should begin immediately prior to the NSWS sampling. Cost will be similar to standard NOLS student prices, actual cost determined primarily by length of field time and the particuler educational demands by the EPA.

SUMMARY

Because of the immediate need for baseline data, NOLS does not wish to see the NSWS in the west postponed or cancelled. NOLS is confident of its ability to escort EPA technicians to study lakes in wilderness areas, and meet NSWS protocols of holding and transport times when evacuating samples from the field to the helicopter pickup site. We are also confident, that following proper training, our instructors can learn and perform required field sampling procedures.

There may be several advantages to nonmotorized sampling. Extracting aluminum in the field may prevent rapid speciation and preserve Al concentrations (personal communication, Charles Driscoll and Chris Kronen, aluminum sampling experts), as opposed to isolating and refrigerating samples that are extracted in up to 12 hours, as is proposed in the EPA assessment (Dr. Kronen has stated that samples may begin to degrade in as little as one-half hour).

There may be an increase in the overall safety of the western survey by using backpackers and limited horse use rather than the proposed action of helicopters. As stated in the EA, high altitude and mountainous terrain, characteristic of many of the wilderness study lakes, involve dangerous flying conditions, quite unlike conditions experienced in all other regions of the NSWS. With the proposed sampling schedule there is a one in ten chance of a helicopter accident. Detailed in the EA, this estimate is considered conservative, but does not take into account the high altitude nature of the proposed action, thus increasing the chance of an accident.

Backpacking is a routine activity at NOLS, with little risk even in the most inclement weather. While there remains a possiblity of injury to backpackers, the chance of a serious injury is minimal. Due to the ratio of NOLS instructors to other team members, the use of NOLS graduates in our alternatives, and the overall outstanding safety record of NOLS, there is considerably less hazard with the backpacking option than the EPA helicopter option.

BUDGET

A. STAFF PAYROLL	DAYS	RATE/DAY	TOTAL
1. Administrative			
Project Leader	165	$240	$39,600
Ass't Project Leader	145	200	29,000
Sub-Region Coordinators(5)	145	175	126,875
Ass't S-R Coordinators(5)	70	75	26,250
Secretary(1)	135	30	4050
Food Packagers(4)	($1,000 for period)		4000
Equipment Staff(2)	($1,280 for period)		2560
2. Field Staff			
Regional Drivers(5)	55	50	13,750
Instructors			
Study Team Leaders(27)	55	60	89,100
Ass't Leaders(27)	55	50	74,250
Sub-total Payroll			410,245
Payroll Taxes (8.8%)			36,102
TOTAL PAYROLL			$446,347

B. FIELD EXPENSES

1. Instructor Medical Insurance	TOTAL	$5,375
2. Rations• for 40 Field Days	TOTAL	$31,000
3. Equipment•		
Outfitting Supplies		$38,812
Specialized tents for Hydrolabs(26)		8,190
First Aid Packs, Maps, Misc.		4,500
TOTAL EQUIPMENT		$51,502

•Totals include two EPA Technicians per study team

4. Private Services

Wranglers for Sample Transport	$25,500
Wranglers for field rationing of study teams	30,750
Evacuation Expense	1575
TOTAL PRIVATE SERVICES	$57,825

C. TRAVEL AND TRANSPORTATION

1. Administration	DAYS	PER DIEM	TOTAL
Sub-Region Coordinators	65	$25 per diem	$8125
	65	$35 per hotel	11,375
Ass't S-R Coordinators	60	$25 per diem	7500
	60	$35 per hotel	10,500
Transportation			8,750
		COORDINATORS TOTAL	$46,250
Project Leader and Ass't Leader	50	$25 per diem	2500
	50	$35 per hotel	3500
Transportation			9875
		PROJECT LEADER AND ASS'T TOTAL	$15,875
Miscellaneous: phones and other		TOTAL	$3000
2. Field Staff			
Instructors and Volunteers (156)	18	$25 per diem	70,200
	18	$35 per hotel	98,280
		TOTAL	$168,480
Drivers(5)	54	$25 per diem	6750
		$35 per hotel	9450
Transportation			2500
		DRIVER TOTAL	$18,700
Vehicles (7 Weeks)		20 Vans	$126,000
		5 Station wagons	$19,675
		VEHICLE TOTAL	$145,675
		PROJECT SUB TOTAL	$992,629
Administrative (19.5%)			193,367
		PROJECT TOTAL	$1,184,996

APPENDIX I

KEY NOLS PARTICIPANTS FOR NSWS

Project Leader: Jonathan Kusel, M.F.S. 1982, Yale School of Forestry and Environmental Studies: currently, Special Projects Director, The National Outdoor Leadership School; Research Associate, National Park Service, Cooperative Park Studies Unit, University of Idaho, 1982-83: NOLS Instructor seven years, Senior Staff, Instructor Trainer.

Assistant Project Leader: Douglas Frisbie, Ph.D., Political Science and Research Methods, University of Minnesota: currently, Director, Frisbie and Associates: Executive Director Minnesota Crime Prevention Center, 1978-81: Project Director Statewide Crime Research Program, head of professional staff of 10, 1975-78: Director, evaluative research efforts state of Minnesota, staff of 15, 1973-75: Research Methods Instructor, Miami University 1969-73: NOLS Instructor, 3 years.

Sub-Region Coordinators:

Dick Stokes: Project Director Colorado Outward Bound School (COBS) since 1983: Winter Program Director at COBS 1982: Course Director COBS 1979-80: Director NOLS Northwest Branch School 1976-78: NOLS Instructor, 5 years, Senior Staff.

Louise Forrest: M.F.S. 1980, Yale School of Forestry and Environmental Studies: currently, Research Associate, Black-Footed Ferret Conservation Studies: population status, winter ecology and data analysis: Research Associate, Thorne Ecological Unit, 1981: NOLS Instructor 6 years, Senior Staff, Instructor trainer.

John Gookin: Staff Sargent United States Marine Reserves: Coordinator NATO winter training film for USMC, 1985: Company Training Officer for a reconnaissance company: plans annual training schedules and supervises instructional staff: Battalion Commander western field manuevers: NOLS Instructor, 4 years, Senior Staff (Incomplete, individual is in the field).

Steven Forrest: M.F.S. 1982, Yale School of Forestry and Environmental Studies: currently, Research Associate Biota Research and Consulting: Field Coordinator CANUSA Spruce Budworm project with the University of Idaho and the USFS Forestry Sciences Laboratory in Corvallis, 1979-80.

Bruce Hampton: Administrative Assistant, NOLS, 1985. Director of Raptor Research Program, Shoshone National Forest, USFS, 1978: Research Associate Rocky Mountain Timber Wolf Recovery Studies, 1976: Wilderness Ranger, USFS Region 4, 1971-73: Wildlife Biologist, Alaska Department of Fish and Game, 1967-71: NOLS Instructor, 13 years, Senior Staff, Instructor Trainer, Alaska Branch School Director, 1974.

NOLS-Project Safety Officer:

Tod Schimelpfenig: 12 years with NOLS. Certified and practicing Emergency Medical Technician (EMT) for 14 years: currently, nationally registered EMT, Wyoming EMT II-Defibrillation: EMT Instructor, CPR Instructor-trainer: Developer of nationally known Backcountry Emergency Care Curriculum: Published outdoor medicine articles, speaker at numerous mountain medicine seminars and symposiums.

LETTER #12

THE STATE OF WYOMING

ED HERSCHLER
GOVERNOR

WYOMING RECREATION COMMISSION
122 WEST 25TH - HERSCHLER BLDG. CHEYENNE, WYOMING 82002

ALVIN F. BASTRON, P.E.

March 18, 1985

Wayne D. Elson
EA Project Officer, M/S 443
U.S. Environmental Protection Agency
1200 Sixth Avenue
Seattle, Washington 98101

RE: §Draft Environmental Assessment: National Surface Water Survey, Western Wilderness Area Lakes

Dear Mr. Elson:

After review and evaluation of the four alternatives presented in the Draft EA, the Wyoming State Historic Preservation Officer has determined that the use of helicopters for sampling lakes in the wilderness areas of Wyoming would have no impact on cultural resources. Indeed, the absence of shoreline contact and the avoidance of camping activities likely to be associated with other alternatives virtually guarantee that surface cultural resources will not be disturbed or adversely effected. We support EPA in this preferred alternative.

Sincerely,

Thomas E. Marceau

Thomas E. Marceau
Review & Compliance Section Head

TEM:klm
cc: Robert M. Reed

LETTER #13

"A Better World Through A Better Environment"

Environmental Testing & Balancing Inc.

P.O. Box 594
Snoqualmie, WA 98065
(206) 643-1666
(206) 454-5450

19 March 1985

Wayne D. Elson
EA Project Officer M/S 443
U.S. Environmental Protection Agency
1200 Sixth Avenue
Seattle, WA 98101

Dear Mr. Elson:

The attached correspondence contains comments on 1) the National Surface Water Survey Western Wilderness Area Lakes Environmental Assessment Draft, 2) Methods Manual for the National Surface Water Survey Project - Phase I, and 3) Scoping Document.

Environmental Testing and Balancing is responding to the above documents due to concerns about apparent inconsistencies, inaccuracies, omissions, and unknowns found in them. This additional letter is being written to express the frustration we have encountered in attempting to give constructive input regarding this project.

Subsequent to reading reports in the media of the EPA's plans to sample western wilderness area lakes using helicopters, our company attempted to contact the EPA to discuss an alternative method for transporting lake water samples. Our efforts were to no avail. Our letters to the EPA went unanswered and several phone calls received little or no response. In an attempt to show the EPA a sample delivery method that we feel deserves serious consideration, our company planned, organized, and funded a demonstration using carrier/homing pigeons to transport water samples from a lake site to a preset destination. In our estimation, and substantiated by media observers, the test was a total success. However, as reported in one newspaper, EPA officials were "unimpressed". If this is true, it is both disappointing and hard to accept. There has bee much publicity about the problems the EPA has encountered in attempting to obtain permission to use helicopters in the wilderness areas and the obvious desirability of long term monitoring of acidic deposition effects on wilderness lakes. It appears the EPA should welcome, or at least be willing to consider, what could be a relatively simple solution to what has become a complex problem. If a solution to a problem seems easy and less costly, is that a good enough reason to discount it without due consideration?

As an added note, to confirm the abilities and dependability of carrier/homing pigeons, contact the U.S. Army Signal Corps.

Sincerely,

ENVIRONMENTAL TESING & BALANCING, INC.

Robert L. Brooke

Robert L. Brooke
President

RLB:bh

cc: Robert M. Reed, Oak Ridge National Laboratory

Airflow and hydronic balancing•HVAC system analysis and troubleshooting•mechanical system documentation

---

"A Better World Through A Better Environment"

Environmental Testing & Balancing Inc.

P.O. Box 594
Snoqualmie, WA 98065
(206) 643-1666
(206) 454-5450

19 March 1985

Wayne D. Elson
EA Project Officer, M/S 443
U.S. Environmental Protection Agency
1200 Sixth Avenue
Seattle, WA 98101

cc to:

Robert M. Reed
Environmental Sciences Division
Bldg. 1505
Oak Ridge National Laboratory
Oak Ridge, TN 37831

Dear Mr. Elson:

Enclosed are our comments on the "National Surface Water Survey - Western Wilderness Area Lakes, Environmental Assessment". Our comments are separated into two sections. Section I deals with apparent incongruities and omissions by the EPA in their preparation of the EA. Section II deals with our proposed alternative to the use of helicopters for water sample delivery from wilderness lakes. Our proposal to use homing/carrier pigeons as an alternative to helicopters was made to the EPA prior to publication of the EA but was not addressed in the document. Considerable research and planning went in to the pigeon proposal and we feel it is a workable plan and possibly the only viable alternative to using helicopters that has been proposed. Therefore, we are submitting it to the EPA and a concerned Public once again for consideration.

Sincerely,

ENVIRONMENTAL TESTING & BALANCING, INC.

Robert L. Brooke

Robert L. Brooke
President

RLB:bh

encl

Airflow and hydronic balancing•HVAC system analysis and troubleshooting•mechanical system documentation

---

"A Better World Through A Better Environment"

Environmental Testing & Balancing Inc.

P.O. Box 594
Snoqualmie, WA 98065
(206) 643-1666
(206) 454-5450

19 March 1985

COMMENTS ON "NATIONAL SURFACE WATER SURVEY
WESTERN WILDERNESS AREA LAKES
ENVIRONMENTAL ASSESSMENT"
dtd MARCH 1985

I. Incongruities and Omissions in the Environmental Assessment

A. Setting a Precedent

Environmental Testing & Balancing has reviewed the Environmental Assessment (EA) for the National Surface Water Survey - Western Wilderness Area Lakes (NSWS). There appears to be a fundamental incongruity concerning the EPA's expressed need for the use of helicopters to deliver water samples in an expedient manner during Phase I of the NSWS but not finding it necessary to use them during Phases II or I of the NSWS.

In the EA, under SUMMARY AND CONCLUSIONS, Environmental Impacts (p v), it states, "Alternative 1 involves a one-time request for motorized access which is unlikely to serve as a precedent for granting other requests. Few, if any future requests would meet the following unique research and administrative objectives and the methodolgical (sic) constraints of the NSWS survey:..."

#40 The primary goal of the NSWS is to collect baseline data which will assist regulatory agencies in setting up long-term monitoring programs to track Acid Rain deposition. Phase III of the NSWS will address this need. If continued monitoring is to be conducted on selected representative lakes under Phase III, the EPA woul need to select those lakes which exhibit the greatest threat of Acid Rain deposition (i.e. wilderness lakes exhibiting low alkalinity).

In Section 1.2 PURPOSE OF THE ACTION (p 2 para 3) it states, "...(2) helicopters will not be used to gain access to wilderness areas during Phases II and III; (3) in most, if not all cases, lakes to be sampled during Phases II and III can be selected outside of wilderness areas;..." The request for helicopter access by the EPA for Phase I has been reasoned on a basis of utility in sample transpor During Phase III, however, it is stated that in "most, if not all" cases helicopters will not be needed. If the EPA does not plan to monitor wilderness lakes during Phase III for Acid Rain deposition, what relevance is there in the data collected from these lakes in Phase I as far as it concerns meeting the main goal of the NSWS. If the EPA DOES choose to monitor wilderness lakes during Phase III and logic is that this might be both desirable and necessary - then the same logi tical constraints for sample delivery will exist and helicopters will be needed again (under present Analytical Protocols).

B. Random Sampling

#41 The EPA has stated in the Scoping Document titled "LAKE SURVEY SUMMARY" (undated) that "...we have chosen a sampling technique called random sampling. This allows us to sample far less lakes than we normally would have to, and then extrapolate the results of this sample to the area as a whole. One drawback is that after th random sample of lakes has been selected, we cannot delete lakes from that list

Airflow and hydronic balancing•HVAC system analysis and troubleshooting•mechanical system documentation

"A Better World Through A Better Environment"
Environmental Testing & Balancing Inc.
P.O. Box 594
Snoqualmie, WA 98065
(206) 643-1666
(206) 454-5450

3/19/85 Comments on NSWS - EA - page two

IB. Random Sampling (contd"

without invalidating the entire sampling scheme. This would make it impossible to come up with regional assessments from the lakes we do sample"

41
ont)

In the EA Section 4.1.7 Consequences to the Survey Objectives (p 60), it states "Alternative 1 in this EA is identical to the survey protocol used successfully in the East and Midwest in 1984. In the East and Midwest, most of the lakes to be sampled were in fact sampled;..." The use of the word "most" indicates that NOT ALL of the lakes in the random sample were actually analyzed. According to the scoping document, this invalidates the entire sampling scheme.

The EPA is presently proposing the same random sampling for the western U.S. If it will come under the same stringent guidelines set down in the East and Midwest study, then serious doubt exists as to whether the EPA can accomplish their goals. Our concern is that if early winter snow storms or inclement weather should prevent the sampling of even one lake in a given random sample then, according to the Scoping Document, the entire effort would be invalidated. It is common knowledge that in the western U.S. early winter snow storms are common occurrences at higher elevations.

C. Wildlife

1. Elk

42

In the EA Section 4.1.3 "Impacts to Wildlife and Endangered Species - Wildlife" (p 61) it states, "Lakes to be sampled in Olympic National Park are in areas used by elk during the mid-September rutting season (NPS 1985). It is highly desireable to avoid disturbing these animals during this time. The fact that effects are in most cases relatively minor is supported by the widespread use of helicopters to enumerate big game, including bears, mountain sheep and goats, caribou, and wolves (Chapman and Feldhamer 1982)."

The Game Department does commonly use helicopters to disband elk herds for protection from hunters. This proves that a helicopters presence is effective in disturbing or scattering herds of elk. And, a helicopter on a water sample retrieval mission in September could not help but disturb the elk during their rutting season. It appears there is an incongruity here and we feel this potential problem needs to be given more consideration.

2. Migratory Water Fowl

43

The impact on migratory water fowl was not discussed at all in the EA. The EPA should address this important issue and consider the following: 1) Many species of migratory water fowl (i.e. Canadian Geese) use lakes located in wilderness areas as temporary resting stops during migration; 2) If the EPA encounters flocks of these birds on lakes to be sampled, on what criteria will they base their decision on "if" and "where" to land?; 3) What precautions will be taken to protect the birds if the decision is made to land?; 4) If a large flock of geese were startled and flew into moving parts of the aircraft, could this cause the craft to malfunction and possibly crash?

"A Better World Through A Better Environment"
Environmental Testing & Balancing Inc.
P.O. Box 594
Snoqualmie, WA 98065
(206) 643-1666
(206) 454-5450

3/19/85 Comments on NSWS - EA - page three

D. Impacts on Bodies of Water

#44

In the EA Section 4.1.4 Impacts to Water Bodies (p 62), the discussion on the possibility of a fuel spill does not address the potential toxic effects to the lake's surface biological populations. Certain lake surface organisms are part of the food chain of fresh water fish. A fuel spill could also render lake sampling invalid if aircraft rotors have an opportunity to mix the spill with lake water to be sampled.

E. Noise Criteria

#45

Noise criteria data referenced in the EA addresses only piston-powered rotorcraft even though the probable craft of choice would be a turbine-powered rotorcraft. As stated in the EA, there are many unknown factors with regard to sound levels generated. It stands to reason that under certain conditions sound levels could exceed those which are acceptable.

There are other potential sound level problems that the EPA has not addressed, such as 1) sound-generated avalanches, 2) hearing damage to wilderness users in close proximity to turbine rotorcraft, and 3) hearing damage to sound-sensitive animals (i.e. bats).

II. Proposed Alternative to Use of Helicopters

A. Sample Transport by Carrier/Homing Pigeons

#46

Carrier/homing pigeons can be used to transport water samples from wilderness area lakes in the time-critical manner stated in the Draft Analytical Protocol (DAP) with one slight modification. The DAP (also titled METHODS MANUAL FOR THE NSWS PROJECT - PHASE I) specifies 60-ml syringes for sample gathering. Two 30-ml syringes in place of one 60-ml syringe would need to be used to accommodate the bird's maximum carrying capacity.

This method is simple, workable, technologically appropriate and carries minimal to zero environmental consequences. A demonstration to prove the workability of this method was conducted on 1 March 1985. With USFS, EPA, and media representatives as observers, water samples were taken from a King County lake and transported via carrier/homing pigeons to a pre-determined site. It is estimated that maximum elapsed time from sample retrieval at wilderness lake to delivery at analyzing lab with transport via carrier/homing pigeon would be five hours. There is flexibility in this method in that mobile roosts can be established at trailheads and sample delivery time to a mobile lab can be cut down to thirty minutes if necessary.

Long-term monitoring (Phase III) using this method continues to have minimal to zero environmental impact.

"A Better World Through A Better Environment"
Environmental Testing & Balancing Inc.
P.O. Box 594
Snoqualmie, WA 98065
(206) 643-1666
(206) 454-5450

3/19/85 Comments on NSWS - EA - page four

B. Pilot Study Proposal

#45
cont)

To substantiate the ability of carrier/homing pigeons to deliver water samples within the guidelines set in the DAP and to dispel the skepticism that accompanies new ideas, we propose a ten (10) lake pilot program. This pilot program, financed by the EPA, would entail a comprehensive evaluation of all parameters associated with meeting the goals of the NSWS. We would encourage close scrutiny by members of the scientific community to evaluate the results and findings of the pilot study.

The relatively minor costs of running this pilot program would seem to be justified when compared with the larger financial and environmental consequences of taking helicopters into the wilderness areas.

We hope the EPA will give careful consideration to this proposal to use carrier/homing pigeons instead of helicopters for the NSWS Project.

END OF COMMENTS

LETTER #14

TELEPHONE USE REPORT

TO BE USED ON ALL LONG DISTANCE
TELEPHONE CALLS, INCOMING OR OUTGOING,
AND ANY LOCAL CALLS MERITING RECORDING
PREPARE IMMEDIATELY - SUBMIT DAILY

ROUTING
[illegible]
[illegible]
Herlihy
File
Originator

CALL FROM: Gearheard
TITLE: Director, Oregon Operations Office
LOCATION & PHONE NO.:
CALL TO: Wayne Elson
TITLE: Environmental Evaluation Branch
LOCATION & PHONE NO.: FTS 399-1828

PREPAID ☑ COLLECT ☐
Check one
DATE OF CALL 3/21/85
Completed
TIME OF CALL 4:00 pm
Portland Time
DURATION OF CALL
Minutes

SUMMARY OF CALL:

I reported DEQ's position on the NSWS Wilderness Lakes EA. Their position is:

DEQ recognizes the need to gather data on acid deposition in western lakes. DEQ supports efforts to characterize baseline lake water quality and lake susceptibility to acidification. However, the use of helicopters to collect samples in wilderness areas will violate State rules at OAR 340-13-020. A variance from the rules will be needed to allow the proposed use of helicopters. DEQ will have to be convinced of the need for such helicopter testing before recommending that the EQC grant a variance. #47

M Gearheard 3/21/85
(Signature) (Date)

LETTER #15

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
Endangered Species, Field Office
Federal Bldg., U.S. Courthouse
301 South Park
P.O. Box 10023
Helena, Montana 59626

MAR 22 1985

IN REPLY REFER TO:
W.11 & M.11

March 19, 1985

Mr. Wayne D. Elson
EA Project Officer, MS 443
U.S. Environmental Protection Agency
1200 Sixth Avenue
Seattle, WA 98101

Dear Mr. Elson:

We have reviewed the Draft Environmental Assessment for the National Surface Water Survey of Western Wilderness Area Lakes.

We wish to add the following comment to those we provided in previous correspondence.

If an alternative involving horse and/or backpack access is selected by EPA for certain highly sensitive areas we recommend that proper guidelines be followed for back country use in grizzly occupied areas. Since a variety of land management agencies (Forest Service, Park Service, Tribal Lands) may be involved under this alternative, we are willing to work with you and these agencies to provide specific grizzly guidelines appropriate for all areas of occupied grizzly habitat. If these agencies wish to provide you with guidelines for areas under their management we wish to review these guidelines to assure that they provide reasonable safety precautions in grizzly habitats and to satisfy our joint responsibilities under the Endangered Species Act. #48

We have no further comments on the EA or this project at this time. Please contact us whenever necessary during further planning and operation of this program.

Sincerely,

Dale Harms
Acting Field Supervisor
Endangered Species

cc: ES, Billings, MT
ES, Cheyenne, WY

LETTER #16

North Cascades Conservation Council SEATTLE, WASHINGTON

MAR 22 1985
ENVIRONMENTAL EVALUATION BRANCH

STATEMENT OF
NORTH CASCADES CONSERVATION COUNCIL
Seattle, Washington
on
DRAFT ENVIRONMENTAL ASSESSMENT
of
NATIONAL SURFACE WATER SURVEY
WESTERN WILDERNESS LAKES
March 22, 1985

The North Cascades Conservation Council is a membership organization, founded in 1957 and dedicated to the protection of wild lands in the Cascade Mountain range, from the Columbia River to the Canadian-U.S. border. The NCCC has worked hard, for over 25 years, to establish Wildernesses and National Park units in the Washington Cascades.

The NCCC appreciates this opportunity to comment on the Draft Environmental Assessment of the National Surface Water Survey, Western Wilderness Lakes. We are deeply concerned about the impact of increasing acidic precipitation on the high mountain lake ecosystems, as well as on the forest productivity and regeneration on exposed ridge-line areas in marginal sites where logging has or will occur. We are also very concerned about the proposed use of helicopters to perform the water sampling from lakes in wildernesses, National Parks, and other wilderness areas. Herein we have restricted our comments to the impacts of the proposed sampling on the Washington Cascades.

1. Helicopters should not be utilized as the sole means of access to all lakes to be sampled. This form of transportation should be justified only in those specific instances where the analytical data obtained from the water samples would be adversely affected by non-mechanical transportation. We urge the use of foot and/or horse transportation to all lakes to be studied except in those specific instances where helicopter use can be demonstrated to be essential. A lake-by-lake justification for the form of transportation selected should be prepared. #49

2. Each lake has specific environmental components of affluent leachate, adjacent vegetation, and submerged organic residue. The variations in the magnitudes and proportions of these components would necessitate each lake having its own control baseline analysis, to be compared with its own subsequent monitoring analyses. Thus, access either by foot or horseback or helicopter can be specified for each lake, based on the necessity, not convenience, of using the selected transportation mode, both for baseline sample collection and subsequent monitoring. #50

3. For the baseline, initial, control assessment of acidity in the lakes to be significant, all subsequent monitoring assessments must follow the identical procedures of sample collection, transportation and analyses as used for the baseline samples. Thus, if helicopters are employed initially at a given lake, due to demonstrated necessity, they also would have to be used each time that specific lake was monitored. Therefore, the frequency, times, and duration of the sampling program must be designated before the program starts. Once helicopter use is started on a given lake it may well turn out that this will continue for years as the monitoring proceeds. #51

4. The spurious statement that the wilderness user is unaffected by the intrusion of the helicopter on his wilderness experience is absurd. Many of our members have complained about such intrusions at any time during their wilderness trip. #52

5. We question whether the samples to be taken would be affected by the propwash from the helicopter. According to our understanding, the helicopter would land on the lake and would remain with its engine running for approximately twenty minutes while samples were taken. Prop-wash would radically alter surface waters and possibly resuspend sediments in shallow lakes. Helicopter exhaust gases may contaminate surface waters producing false results. #53

6. All the above concerns we have expressed apply to all lakes considered for study. What is the specific justification for each lake selected or were they chosen at random? #54

Respectfully submitted,

Patrick D. Goldsworthy
Chairman of the Board
North Cascades Conservation Council
2514 Crestmont Place West
Seattle, Washington 98199

F - 13

SIERRA CLUB
530 Bush Street, San Francisco, California 94108 (415) 981-8634

LETTER #17

22 March 1985

Wayne D. Elson
EA Project Officer, M/S 443
U.S. Environmental Protection Agency
1200 Sixth Avenue
Seattle, Wa 98101

'85 MAR 22 P4:29

RE: NATIONAL SURFACE WATER SURVEY
WESTERN WILDERNESS AREA LAKES
ENVIRONMENTAL ASSESSMENT
DRAFT
EPA 910/9-85-125

Dear Mr. Elson:

Thank you for the opportunity to comment on the draft Environmental Assessment concerning the proposed National Surface Water Survey as it affects certain lakes in western wilderness areas.

OFFICIAL COMMENTS OF THE SIERRA CLUB

The draft document was sent by the EPA to numerous individual leaders and state and local units of the Sierra Club. I am sure that you have received considerable comment from Sierra Club leaders. These may express a variety of viewpoints, all of which we trust you will take under consideration.

However, as your proposal deals with a national study and has implications for hundreds of wilderness lakes across the entire West -- as well as for fundamental legal issues pertaining to the National Wilderness Preservation System -- this letter is the official statement of the views, policies and legal concerns of the Sierra Club.

SIERRA CLUB SUPPORTS ACID RAIN RESEARCH -- AND ACTION!

The Sierra Club has long been a leader in both the preservation of wilderness and in the effort to curtail pollution which contributes to acid rain. We strongly support continued research on the causes and effects of acid rain. However, we strongly disagree with the position of the Reagan Administration and the Environmental Protection Agency that additional research is prerequisite to any national program to control sulphur dioxide and nitrogen oxide emissions. The wilderness lakes -- and the total wilderness environment -- which are affected by acid deposition would be in better shape today had the Reagan Administration not blocked acid rain control legislation for the past four years. This continuing posture of intransigence by the Administration has resulted in and will continue to result in serious, cumulative damage to wilderness lakes, the environment generally and human health.

"When we try to pick out anything by itself, we find it hitched to everything else in the universe." *John Muir*

EPA IS THE WRONG AGENCY TO ASSESS ITS OWN PROPOSAL IN AN ENVIRONMENTAL ASSESSMENT

Turning to the specific proposal you are advancing, we must immediately note that the approach being taken in the analysis of this proposal is fundamentally flawed. It is NOT the responsibility of the Environmental Protection Agency to judge and decide the issues of appropriate access to federally-designated wilderness areas and national parks. Nor is the EPA the right agency to formulate and judge among alternative means of access to federal wilderness areas.

In this regard, we are concerned that the EPA document -- despite brief allusions to the role of the land managing agencies -- may seriously mislead the public.

To the degree that you needed to specify the nature and requirements of your proposal, this would best have been done directly with the land managing agencies involved. It is those agencies which are required to evaluate your proposal, consider alternatives, and provide for public involvement in *their* decision about whether to grant your request. In fact, the EPA in this matter is in exactly the same position as any other applicant or permittee seeking a particular special or non-conforming use of the public lands. The burden of satisfying both the National Environmental Policy Act and the Wilderness Act lies with the land managing agencies, not with the applicant. #55

For example, a mining company seeking motorized access to wilderness for mineral development does not prepare the EA or decide whether or not the proposed action merits an EIS as opposed to an EA. Had the USGS proposed a scientific study of mineral core samples from several hundred locations within scores of wilderness areas in every western state, we would not accept the USGS preparing the assessment, or deciding whether or not this was a major federal action. Frankly, this sketchy EA would not be considered adequate.

NEPA STANDARDS ARE NOT THE TEST FOR WILDERNESS ACCESS

The Environmental Assessment purports to assess the environmental impacts associated with the proposal for helicopter access to hundreds of wilderness lakes spread across the entire West. It is written in a style which suggests that EPA considers the major legal issue here to be one arising under the National Environmental Policy Act.

In effect, this analysis purports to compare the ENVIRONMENTAL IMPACTS of alternative means of access to wilderness lakes. In summarizing its rationale for preferring the all-helicopter alternative (No. 1), the EPA uses standard NEPA language (p. 31, final paragraph):

> "No irretrievable or irreversible commitment of resources would occur. The temporary and largely mitigable impacts are not considered to be 'significant' impacts to the 'human environment' under the National Environmental Policy Act ...." #56

Even assuming all the above-quoted EPA conclusions to be true, they are basically irrelevant to the decisions required if helicopter access is to be permitted. Nor is it up to the EPA to "consider" whether these impacts exist or are "significant." That decision rests with the Secretary of Agriculture or the Secretary of the Interior, depending on the particular wilderness or park involved -- not with EPA. The issue to be decided is NOT whether the proposal involves "significant impacts" to the "human environment." Nor whether those impacts are "temporary" or "mitigable," or are "irretrievable" or "irreversible." Under "Affected Environment," the EA treats authorization for motorized entry only as a philosophical discussion of wilderness values. It is not. It is an interpretation of law -- the Wilderness Act.

Wilderness areas have been designated, in the Wilderness Act and in individual statutes, "for preservation and protection in their natural condition..." [Wilderness Act, Sec. 2(a)]. The law is clear: the introduction of mechanical and motorized contrivances is antithetical to this purpose.

The Wilderness Act does provide for effective management of wilderness areas. The Secretary of Agriculture and the Secretary of the Interior have certain narrowly drawn authority to permit incompatible activities or installations within wilderness areas. The whole thrust of the law is, however, to assure that these incompatible intrusions are allowed only in extraordinary circumstances. In such cases -- which clearly must be weighed on a site-specific, case-by-case basis -- it must be determined by the appropriate Secretary that any such proposed intrusion is "*necessary* to meet *minimum* requirements for the administration of the area for the purpose of this Act..." [Wilderness Act, Sec. 4(c) emphasis added].

#56 (cont) This dual test of both necessity and minimum intrusion is specified in section 4c) of the Wilderness Act. It has been reinforced by repeated congressional directives, set forth in committee reports from both the House and the Senate.

That decision has to do with whether -- on a lake-by-lake basis -- the sampling proposed by EPA is *necessary* and, if it is, whether helicopter access is the *minimum* means of access in terms of intrusion on the wilderness. The affirmative duty to make the decisions lies upon these officials, not the EPA. The statute which must be applied is the Wilderness Act (read in the light of the additional requirments of NEPA), not NEPA itself.

As it stands, the EPA document does not persuade the lay reader that helicopter access is *necessary* these nearly 500 wilderness lakes. Nor does it persuade the reader that the alternative of horse-party access is incompatible with the EPA sampling protocols.

In fact, on the basis of a careful reading of the EPA document, we are persuaded that the use of helicopters -- as opposed to horseback or other non-motorized access -- is not essential and is based almost entirely upon efficiency, convenience and purported cost savings. These are factors not permitted to affect the land management agency's decision required by the Wilderness Act.

However, the issue is not whether this EPA document is persuasive. Without regard to EPA's assertions, it will be up to the Secretary of Agriculture and the Secretary of the Interior, and the land managing agencies reporting to them, to arrive at their own conclusions on these points in making the tests required by the Wilderness Act.

LAND MANAGING AGENCIES MUST ASSESS WHETHER THE EPA PROPOSAL IS "NECESSARY" AND "MINIMUM," NOT EPA

We assert that the proposed access by EPA is in no way different from any other request for an incompatible use or installation within a wilderness area. #57 That your proposal involves a more worthy purpose (scientific research on acid rain) than others does not make it subject to any different, less stringent standard of decision for the Secretary involved. The Wilderness Act creates no such "superior" class of noncompatible uses.

The Forest Service and the National Park Service must treat your proposal just as they would any other request for introduction of a noncompatible use into a wilderness area. They must satisfy themselves -- on the record, not by merely accepting EPA's assertions -- that the proposed use is indeed *necessary*. Thus, for example, they must ascertain whether the samplingprotocols do indeed mandate the kind of turn-around times for access you assert. Their own experts in water analysis can help, and they have available disinterested consultants (for example, the National Academy of Sciences).

They must also consider whether, if necessary, your requirement for access can be met in a more "*minimum*" way, that is less incompatible with the wilderness *character* (not just environment) than your proposal. They may not, under the law, merely accept your assertions in this regard. Nor may they accept a sweeping generalization that all of nearly 500 lakes must be accessed in the same fashion. #57 (cont)

The Forest Service Manual cited on page 36 of the EA states that aircraft may be used when "either an administrative or a cooperative activity essential to the management of the wilderness cannot reasonably be accomplished with primitive methods or by mechanical means. In determination of what is reasonable, there must be a showing that the need is based upon more than the efficiency, convenience, and economy..."

EPA demonstrates precisely the opposite in its environmental assessment: that is, that the use of helicopter landings in every lake is not essential to the management of wilderness and the selection of helicopters over other alternatives for every lake is based almost entirely on efficiency, convenience, and economy.

THIS DECISION MAY ONLY BE MADE ON A WILDERNESS-BY-WILDERNESS, CASE-BY-CASE BASIS

It is a fundamental error for the Environmental Protection Agency to propose that the land managing agencies consider this matter of helicopter access on a west-wide basis. That is not how the law commands the Secretary to reach his decision. Each intrusion into each individual lake in each wilderness area -- for however worthy a cause -- must be considered and decided on its own merits, in the site-specific circumstances of that particular area.

The courts have consistently ruled that broad, generalized analysis and evaluation of wilderness qualities is unacceptable. The courts have held -- and been affirmed on appeal -- that such analysis must provide site-specific consideration [*State of CA vs. Block*, 690 F.2d 753(9th Cir. 1982). The Congress has, on numerous occasions, expressed its strong support for this view. #58

The parallel to your proposal is exact. If the qualities of proposed wilderness areas must be given site-specific evaluation by the agency studying their possible designation, then certainly proposals for incompatible intrusions must have equally site-specific evaluation. It is this issue on which the Sierra Club has grave concerns as to the precedent involved in your proposal -- not the issue of helicopter access per se.

Helicopters have been permitted to enter wilderness areas in the past, and for a variety of reasons consistent with the Wilderness Act. We are not asserting that helicopter access per se is barred by law in every instance for every lake is which it is being proposed. But it may be barred by law in many -- even most -- instances.

Whether helicopter access is to be allowed to the specific lakes you propose is a matter to be decided on a case-by-case basis, lake-by-lake by the Secretary involved, in view of the particular circumstances and alternatives which may be applicable and practicable in each case.

Weighing against this clear legal requirement are the needs you assert for access which assures adherence to the sampling protocols of your study. These are importance concerns -- but not ones on which the assertions of the applicant can be taken by the appropriate Secretary as definitive. If an applicant for a nonconforming use within a wilderness area may simply assert conditions which make only one form of access practical, we will have allowed a most dangerous precedent.

This EA is clearly inadequate to the task of evaluating each individual lake, each assessment of standards. An EA could be produced for each lake or perhaps for each wilderness so long as it is understood that within a single wilderness some lakes may meet the standards for helicopter access and some may not. However, if the Forest Service should choose to assess several hundred lakes in one document, it would necessitate a full Environmental Impact Statement, not this sketchy Environmental Assessment.

#58
(cont)

SUMMARY

The Sierra Club strongly supports action to stop the pollution which causes acid rain. In this regard, we support research to identify effects of acid deposition, including within wilderness areas and national parks. We wish it to be clearly understood that we do not oppose the National Surface Water Survey in any way. Nor do we oppose conducting such research within wilderness areas.

The question of what form of access is to be permitted for such sampling within wilderness areas has been improperly portrayed in the EPA document. It is not EPA's place, as the applicant for a non-conforming use of hundreds of wilderness areas, to define the environmental impacts nor to frame the alternatives. We regret the public confusion the EPA document may cause in this regard.

Decisions about the form of access into each wilderness lake must be made by the land managing agency on a case-by-case basis. Just as they may not make a blanket decision to permit helicopter access to all of nearly 900 lakes (without a finding that no other form of access is practicable to any of those lakes), so they may not make a blanket decision that helicopter use is inherently proscribed in all cases.

It is the purpose of this letter to comment on the EPA draft Environmental Assessment. We consider the EA to be legally inadequate on its face. Exceptions to the Wilderness Act are of such significance, under the law, that only a site-specific analysis is adequate. However, it is the responsibility of the Secretary of Agriculture and the Secretary of the Interior -- not EPA -- to prepare an environmental assessment or full environmental impact statement on this matter. They, not the EPA, should evaluate the proposed nonconforming use of each wilderness lake as to its necessity. They, not the EPA, should formulate alternatives, going well beyond those considered in the EPA document. They, not the EPA, must consider the legal requirements and limitations imposed by th Wilderness act and other applicable law.

The Sierra Club expects to take a vigorous role in the decisions pertaining to access to each lake in each wilderness area, working with the responsible land managing agencies. Because we believe that site-specific evaluation and decisions must be reached on a case-by-case basis, our individual chapters in each western state will deal with each wilderness area, applying the national Sierra Club policy outlined in this letter.

We appreciate the hard work evidenced in the EPA document. We commend the EPA for vigorously pursuing important research on acid rain. And we appreciate this opportunity to offer our views.

Sincerely,

Michele Perrault

Michele Perrault
President
SIERRA CLUB

cc:

FEDERAL GOVERNMENT DISTRIBUTION:

Hon. John Block, Secretary of Agriculture
Hon. Donald Hodel, Secretary of the Interior
Hon. Lee Talbot, Administrator, Environmental Protection Agency
Bernard Goldstein, Assistant Administrator for Research and Development, EPA
Ernesta B. Barnes, Regional Administrator, Region 10, EPA
Robert M. Reed, Environmental Sciences Division, Oak Ridge National Laboratory
Max Peterson, Chief, Forest Service
Russell Dickinson, Director, National Park Service
Regional Foresters, All Affected Regions, Forest Service
Regional Directors, All Affected Regions, National Park Service,

SIERRA CLUB DISTRIBUTION:

Regional Vice Presidents, All Affected Regions
Regional Conservation Committee Delegates, All Affected Regions
Chapter Chairs and Chapter Conservation Chairs, All Affected Chapters
Rose Strickland, Chair, & All Members, Public Lands Committee
Vivian Li, Chair, Air Quality Committee
Field Offices

SIERRA CLUB LEGAL DEFENSE FUND DISTRIBUTION:

Rick Sutherland, Executive Director
Vawter Parker, Legal Coordinator
H. Anthony Ruckel, Denver Office

LETTER #18

THE WILDERNESS SOCIETY

CHARLES M. CLUSEN
VICE PRESIDENT • CONSERVATION

MAR 25 1985

21 March, 1985

Wayne D. Elson
EA Project Officer, M/S 443
Environmental Protection Agency
1200 Sixth Avenue
Seattle, Washington 98101

Dear Mr. Elson:

The Wilderness Society has received the Environmental Assessment of the National Surface Water Survey (NSWS) for Western Wilderness Area Lakes and would like to comment on the assessment.

We are sympathetic to the goals of the NSWS and are concerned with acid rain degradation of wilderness areas -- as well as of non-wilderness lands. We recognize scientific research as one of the objectives of the Wilderness Act and support the basic intent of EPA's proposed survey. However, the preferred alternative of helicopter access for all lakes in the survey raises several major problems that are not answered in the Environmental Assessment. In addition, the precedent of allowing helicopter access into wilderness areas is ignored. We must, therefore, oppose the Survey until and unless these questions are adequately addressed. #59

In the EA, you state that you met with Forest Service officials in late 1984 to discuss the Survey. Yet you had already completed the eastern and midwestern portions of the study before beginning to scope the EA necessary for the western portion of the project. Given the size and importance of this project, it is possible that involving Forest Service officials -- as well as state officials and other interested parties -- in determining the design of the whole project, modifications could have minimized the number of wilderness lakes included in the survey. Too often an environmental assessment is considered a hurdle to be overcome rather than a helpful part of the decision-making process. This Assessment appears to be an example of such thinking. #60

The Environmental Assessment states that the use of helicopters will be limited to Phase I of the survey. It does not explain why helicopters will not be necessary in Phases II and III -- or why " regionally representative" lakes can be used in Phases II and III but not in Phase I. Indeed, given the emphasis placed on the proposed protocols for short holding times, the EA does not explain how Phases II and III would work. The EA is disingenuous in ignoring the fact that if the Environmental Protection Agency surveys 498 lakes in wilderness areas, this baseline information may well be included in later studies -- which could include requests for helicopter access in the future. It may be impossible to quantify additional requests for access, but the possibility should have been acknowledged and discussed in the EA.

The Environmental Assessment includes a section of a USDA regulation stating that the use of aircraft must be " based on more than efficiency, conveniience, and economy." Yet only 2 pages earlier, at the bottom of page 3, of the 4 reasons given for proposing helicopter use in wilderness areas, 2 are clearly for the convenience of the agency. And it is hard to believe the last of the 4 reasons -- that helicopters are safer than access on horseback or foot. Later, on page 24, the downtime due to bad weather or mechanical problems is identified as 60% -- which seems to contradict the earlier listing of the benefits of helicopters.

We were also concerned with the decision not to consider foot access on the grounds that consequences would be the same as those caused by using horses. We do not believe that this is true. Access by foot would often create much less damage to the wilderness than would horse access.

We respect the responsibility of federal land managers of Class I areas to protect those areas. But this is a secondary goal of the proposed survey and protection of wilderness lands is sacrificed for the primary goal of the survey. As we read the Wilderness Act, helicopter access should not be allowed for this project because it is not essential for managing wilderness areas. We would hope that the EPA modifies its proposals to meet these concerns. We were less persuaded by the urgency expressed by the EA than we might have been had the Administration not just proposed delaying the acid rain program of the Forest Service.

Section 4(b) of the Wilderness Act states that "each agency administering any area designated as wilderness shall be responsible for preserving the wilderness character of the area". Helicopter use in wilderness will disrupt the

Wayne D. Elson
21 March 1985
Page Three

wilderness character of designated areas -- as will acid rain deposition. Therefore, a method must be found to protect scarce and fragile wilderness resources from both acid rain damage and from the intrusion of helicopter use. #66 (CONT)

The EPA's proposed survey should be evaluated as other non-conforming uses of wilderness are evaluated by federal land managers: the Forest Service should prepare an environmental impact statement to consider the use of helicopters in 498 lakes in designated wilderness areas, with this EA serving as the application for a non-conforming use. The standards set forth in the decision of the Ninth Circuit Court in State of California V. Block provide that the EIS's "form, content, and preparation foster both informed decision-making and informed public participation." This standard has not been met by the EA, but we believe site-specific information prepared by the land managers will answer many of the questions left unanswered by the EA. #67

Sincerely,

Charles M. Clusen
Charles M. Clusen

LETTER #19

Arizona • Colorado • Idaho
Montana • Utah • Wyoming

MAR 25 1985

National Audubon Society
ROCKY MOUNTAIN REGIONAL OFFICE
4150 DARLEY, SUITE 5, BOULDER, COLORADO 80303 (303) 499-0219

March 20, 1985

Wayne D. Elson
EA Project Officer, M/S 443
U.S. Environmental Protection Agency
1200 Sixth Avenue
Seattle, WA 98101

Dear Mr. Elson:

We appreciate having this opportunity to comment on the draft Environmental Assessment for the National Surface Water Survey, Western Wilderness Area Lakes. Our major concerns with the proposed action involve lakes in Montana, Idaho, Wyoming, Colorado, and Utah, and specifically potential impacts on the threatened grizzly bear (Ursus arctos).

A number of the lakes proposed for sampling are located in occupied grizzly bear habitat. From reading the EA and from conversations with U.S. Fish and Wildlife Service personnel, we conclude that the survey will, in fact, probably not impact this species in any substantial way. The lakes sampled are primarily at high altitudes, time of sampling would be limited to early fall, and the sampling itself is a one-time event. Even if helicopters were used in every case, disturbance to grizzlies by a one-time flight would be temporary and minimal. The season of sampling is important; in the fall, grizzlies generally move to lower elevations, seeking the food necessary to tide them through hibernation. The bears may not be present in the sampling areas at all.

We have to qualify these statements, however, by noting that repeated passes by helicopters at low elevations can substantially disturb the bears. Thus our conclusion of minimal or no impact depends on the flights being strictly limited as to height above ground. The machines should fly only on the predetermined route; no low-elevation scenic touring en route to or from the targeted lakes should occur. This would help to minimize impacts on other sensitive species, as well. #68

The question of motorized access into wilderness areas also concerns us greatly. In this case, a survey to collect desperately needed, and crucially important, data on the bio-chemical characteristics of high-altitude lakes is at issue. There can be no question that the data are necessary to develop public consensus on strategy to deal with acid precipitation. It's also obvious that the data must be of high quality, comparable to those collected in other parts of the country, and legally defensible. We agree with you that the eventual impacts of not collecting such data will include long-term damage to aquatic ecosystems and forest productivity, inside and outside wilderness areas.

There is constant pressure on wilderness managers to allow motorized access in Wilderness for various purposes. While the Wilderness Act does provide some flexibility on this topic, each case needs to be well explained and justified. This is where the draft EA needs improvement.

Our suggestions:

1. EPA should take a case-by-case approach and determine the degree of accessibility of each lake specifically. #69

2. Examine other alternatives in more detail, rather than rejecting them out-of-hand. For example, the National Outdoor Leadership School has submitted a proposal to access the lakes on foot. This would certainly protect wilderness values, but what are the implications for data quality? This and other proposals may turn out to be infeasible, but you should carefully consider them before so deciding. #70

3. Above all, clearly define the terms "accessible" and "inaccessible," as they apply to the lakes under consideration. #71

We have gotten conflicting statements from scientists in this field about the need for analysis of samples within 12 hours. Generally the feeling seems to be "the sooner, the better." There is also evidently a question of making the data comparable to those collected elsewhere. If the 12-hour analysis is the common standard, please say so. We would regard the need for consistency in the data set as a valid reason for requiring a 12-hour turnover. #72

We believe this proposal is part of an important and needed study of national surface water conditions. In order for the data to be useful for national policy decisions, they must be consistent with data already collected. However, motorized access into wilderness, even in a good cause, remains a difficult, controversial issue. In this context, we would urge EPA to look carefully at each case where access is necessary and determine what methods can both protect wilderness values and provide the quality of data needed. We firmly believe that wilderness areas can and should serve their valuable function as an ecological baseline in this case. However, the case for motorized access must be clearly justified. Non-motorized access should be chosen if it is suitable and available. #73

If it is determined that helicopter access is the only method available, we urge you to plan the survey to minimize conflicts with other wilderness resources, such as wildlife. #74

Again, let me stress that this case seems unique. The long-term effects of acid precipitation threaten the very integrity of our Wilderness system. The seriousness of the threat in this instance may well justify use of motorized access to Wilderness. However, we view this proposal as a one-time, limited exception to the general prohibition on motorized vehicles in wilderness.

Thank you for considering our concerns.

Sincerely,

Pauline Plaza
Pauline D. Plaza
Issues Specialist

cc: Dan Taylor
Jay Copeland
Chapter Presidents

LETTER #20

Wayne D. Elson
E.A. Project Officer M/S 443
U.S. Environmental Protection Agency
1200 Sixth Ave.
Seattle, WA 98101

MAR 25 1985

March 22, 1985

Dear Mr. Elson,

I am pleased that the EPA is attempting to obtain baseline data on the current level of acidification of western U.S lakes. Having lived in Washington State all my life I have seen the visual effects of metropolitan air pollution spreading fartar into the Cascade valleys and wonder how severe the effects may be on the forests and waterways of the Cascades and other areas. I have spent much of the last 16 seasons in the high country of the Cascades and been to many of the lakes which are proposed to be sampled. I also have been intimately involved with the management of the wilderness areas and National Parks in the state and have worked to keep motorized intrusions to a minimum in these areas.

My general impression of the EA was that it gave no reasonable alternatives
to the use of helicopters samplling to complete the survey. Instead, it #75
seems, the document is a strongly biased justification towards the use of
helicopters for convienience and simplicity. Long sections in the EA discuss
the noise produced by helicopters and how severely peoples "wilderness exper- #76
ience will be impacted by Alternative 1 are examples. Another example is
table S-1 which as +'s, 0's, and -'s to indicate effects. Here + = "pos-
itive effect", 0 = no effect, an - = a "minor negative effect". An unbiased #77
EA would have left this as a "negative effect".

There is a definite lack of creativity in coming up with the four alternatives. There are many intrepid hikers in this state who commonly pack rubber boats to wilderness lakes and wilderness rangers who pack all sorts of strange objects into the wilderness. The EPA should investigate the use of volunteer groups, #78 such as Volunteers for Outdoor Washington, and also investigate the possibility of contracting some of the work out to the Forest Service.

Wh t bothers me most about the proposed use of helicopters is that there was no effort on the part of the EPA to comply with the spirit of the Wilderness Act. It may not be any great disaster landing a helicopter on a remote lake, but it is a violation of the Wilderness Act from which government agencies # should not be exempt. EPA should have designed its study, to begin with, under the assumption that motorized equipment would not be allowed in the wilderness areas.

In addition to the above comments I have the following specific comments on the proposed study:

1) There are no sites to be sampled in Nevada and only a few in the desert SW. Is this due to the low precipitation in these areas or because there are fewer sensitive lakes. Since acid precipitation may be im portant in causing # soil damage should not these large areas dwonwind from the California metropolitan areas and coal plants in the Four Corners area be surveyed?

2) Crews reaching the lakes in the study by foot travel may be able to # sample some lakes during inclement weather which would be inaccessible to helicopters.

3) Would helicopter exhaust have any effect on the surface samples? #

4) On page xiii it is mentioned that a sample packed out on horse back may shake a lot which would effect the samples quality. Why do you feel that # shaking by a horse is any different than shaking by helicopter?

5) I would like clarification on the claim made that the NSWS data would be of use to wilderness managers. It looks like the data will be useful to law # makers, urban planners, and those legislating acid precipitation regulations.

Thank you for considering my comments and I look forward to seeing a copy of the final E.A.

Sincerely,

Gary Paull

Gary Paull
P.O. Box 1973
Chelan, WA 98816

LETTER #21

Washington Wilderness Coalition
P.O. Box 45187, Seattle, WA 98145-0187 (206) 633-1992

MAR 25 1985

22 March 1985

Wayne D. Elson
EA Project Officer, M/S 443
U.S. Environmental Protection Agency
1200 Sixth Avenue
Seattle, Washington 98101

Dear Mr. Elson:

The Washington Wilderness Coalition (WWC) appreciates this opportunity to address the National Surface Water Survey, Western Wilderness Area Lakes, draft environmental assessment (EA). The WWC, consisting of over 1000 individuals and 30 organizations, is dedicated to the protection, preservation, conservation and sound management of wilderness, public lands, wildlife and water resources of Washington State. Our organization was deeply involved with the establishment of the new Wilderness Areas by the Washington State Wilderness Act of 1984, and is currently participating in resource allocation and wilderness management of these areas and other lands in the U. S. Forest Service's Forest Planning process.

COLLECTION OF DATA

The WWC strongly supports the collection of data on the effects of acid rain in lakes both inside and outside of Wilderness Areas. Establishing a baseline on lake acidity is essential to monitor the increase in acidity and thereby to assist the agencies and the public to better combat air pollution.

Despite some rumors to the contrary, acid precipitation constitutes a serious threat to the aquatic ecosystems of Washington State. We are particularly concerned about the water quality in the Alpine Lakes Wilderness Area, due to the lack of buffering agents on the water combined with the proximity of the area to the large industrial centers of Puget Sound.

USE OF HELICOPTERS

Despite our concern over the water quality of the lakes, especially high alpine lakes in Wilderness Areas, however, we are appalled by the notion, as described in the EA (p. 1), that "sampling protocols established for the national survey call for the use of helicopters to gain access to lakes for sampling."

#8 In no way has the EPA proven within reasonable doubt that the use of helicopters is the only way that this study can be accomplished. The EA reads like a justification for the use of helicopters, with page after page of discussion about why helicopters should be allowed. The discussion is intended to lead the reader to believe that helicopter use constitutes the most efficient and convenient means of water sample collection. But this is not the point.

The point is that Wilderness Areas have been established to protect the wilderness and wildlife resources and to provide for primitive and unconfined forms of recreation. Activities within the Wilderness Areas must be in compliance with the Wilderness Act. Nowhere in the Wilderness Act are allowances made for vehicular use based on efficiency, convenience and economy.

Helicopters flying into nearly 500 lakes in the West would constitute a major disruption on those areas. We maintain that the proposed action is illegal, that none of the exceptions listed in Sec. 4(c) of the Wilderness Act of 1964, which allows the use of aircraft only "as necessary to meet minimum requirements for the administration of the area for the purposes of this chapter (including measures required in emergencies involving the health and safety of persons within the area)," apply to this proposed EPA study.

ARRAY OF ALTERNATIVES

The EA is limited in its array of alternatives by discussing only four options: helicopters, horses, helicopters and horses, and no action. The section regarding on-the-ground access has been severely restricted to include only discussion of access by horses.

#8 The EA fails to discuss the most obvious type of access, by foot. The EA fails to address the use of volunteer teams of hikers, which could be organized to carry the gear in and the samples out of the Wilderness Areas. Volunteers could also be trained to conduct the water samples and field experiments. Even if the use of volunteers to conduct the actual water sampling does not fall within the rigorous scientific procedures required by the EPA, hikers could still provide a major contribution to this project, namely their musclepower.

In cases of tight timing, the strongest hiker in the party could be loaded up with the water sample and he or she could head for the trailhead, leaving the others to pack up the equipment and boat and hike out more slowly. Plenty of opportunities exist to enlist the aid of college students, or Eagle Scouts, or Outward Bound, or Volunteers in Outdoor Washington, or others who could be brought into the project. The net result would be completion of the project in a legal manner, a stronger cooperative effort between the EPA and the citizenry, and an improved public image in the press. #86 (CONT)

Other methods do exist, such as that proposed by Environmental Testing and Balancing. In the case of very remote lakes, the syringes could be sent out separately (or flown out, in the case of the carrier pigeons, or run out) from the rest of the sample. Those experiments which are time-critical could then be conducted on those water samples.

CONCLUSIONS

In conclusion, we wish to restate our strong support and endorsement of the acid precipitation study. The data is essential to future monitoring and controlling of air pollution, in addition to protecting of our alpine lakes and their ecosystems.

At the same time, however, we are disturbed by the view advocated by the Environmental Protection Agency that the only way for this study to be accomplished is by use of helicopters. We challenge the EPA to be creative in the development of this project. Ways do exist for major sampling to take place by primitive or non-mechanical means. We strongly encourage the EPA to explore and utilize those non-mechanical means in this study.

Thank you very much for this opportunity to comment.

Very truly yours,

Karen M. Fant
Executive Director

LETTER #22

DENVER AUDUBON SOCIETY
1720 Race Street Denver, Colorado 80206

March 22, 1985

Wayne D. Olson
EA Project Officer, M/S 443
U.S. Environmental Protection Agency
1200 Sixth Avenue
Seattle, WA 98101

MAR 25 1985

Dear Sir:

On behalf of Denver Audubon Society, I would like to submit the following comments in re the Draft Environmental Assessment for the National Surface Water Survey (NSWS) relating to Western Wilderness Area Lakes.

1./

We fully agree to the importance of NSWS for long range policy planning to mitigate acid deposition impacts, and recognize in this respect the importance of high altitude lakes of low alkalinity, many of which are in wilderness areas.

Nevertheless, it cannot be too strongly stressed that it is Phase II and Phase III of NSWS what will provide most of the information on acid deposition impacts on individual lakes. It is only in these phases of NSWS — which do not involve use of helicopters — that the crucial data will be acquired on seasonal effects, changes over a period of time, and biological impacts. Phase I without Phase II would make little sense for the study of acid deposition impacts. Some of the lakes selected for Phase II, and possibly for Phase III should be within wilderness. #87

On the other hand, perhaps the strongest argument for the importance of Phase I is that it will help to resolve questions of location of lakes of highest risk to damage by acid deposition, and guide the selection for Phase II and Phase III.

2./

With some reservations, we tend to agree that to acquire data of the quality needed for Phase I of NSWS, helicopter access to the lakes is needed. We find no reason to question the conclusion that the helicopter insult to wilderness values would in general, barring accidents, be limited and temporary in nature.

At the same time, the principle of eliminating motorized access to Wilderness Areas seems to us extremely important. Helicopters do not represent the minimum tool for getting the data. If alternative modes of access are considered, the issue appears to be whether some deterioration in quality control on the data for wilderness lakes, and some logistic inconveniences, can be tolerated without compromising the objectives of NSWS. #88

It should be incumbent on EPA for each wilderness lake proposed for study to reassess its importance to the data base for long range policy planning, and to eliminate motorized access wherever feasible— for example, by substituting a lake outside of Wilderness, or by reducing the number of lakes sampled, or using teams on horseback. In making judgements, EPA should not lose sight of the special importance of Phase II, rather than Phase I, for long range policy planning. #89

3./

It appears from the information in Fig. 3.2-2 and Table 3.2-1 of the Draft E.A. #90

that an extraordinarily large number of lakes are proposed for Phase I sampling in the area which includes Rocky Mountain National Park, the Never Summer Range, and the Indian Peaks Wilderness: A total of 48 lakes, or 30% of the total in and out of wilderness proposed for all of Colorado. In the short time "window" for access to these high altitude lakes in early fall, this implies an impact greater than just the sum of individual visits. Surely there is redundancy here! Would it truly compromise the study to scale back some of this? #90 (cont)

This concentration, one suspects, arose in the random selection of a preconceived number of lakes out of the very limited pool of high altitude lakes of low alkalinity. It is true, to be sure, that each lake is a case by itself, but would it not make sense to trade a cut in the proposed number for Phase I sampling in this area for attention to a few more lakes during the more meaningful Phase II?

Sincerely yours,

Francis B. Clough, Ph.D.
Member, Conservation/Wildlife Committee,
Denver Audubon Society

cc:
R.M. Reed, Envir. Sci. Div./ORNL
Lois Webster, DAS
Karen Hollweg, DAS
Cliff Merritt, DAS
Polly Plaza, Natl. Audubon Soc., Western Region

LETTER #23

Sierra Club
Rocky Mountain Chapter
WILDERNESS COMMITTEE
"...TO EXPLORE, ENJOY AND PRESERVE THE NATION'S FORESTS, WATERS, WILDLIFE AND WILDERNESS..."

MAR 25 1985

Wayne D. Olson
EA Project Officer, M/S 443
U.S. Environmental Protection Agency
1200 Sixth Avenue
Seattle, WA 98101

Dear Mr. Olson:

The Rocky Mountain Chapter of the Sierra Club supports the National Surface Water Survey in an effort to establish baseline values for lakes in our National Wilderness Preservation System. The importance of the baseline values will allow wilderness managers to assess the impacts that man is having in wilderness areas. It is, therefore, extremely important that the acquisition of the samples that will provide the baseline values be accomplished in the most sensitive manner.

Suggestions have been made that any helicopter access to remote wilderness lakes which cannot fall within the twelve hour "sample-to-lab" criteria will further widen the door for helicopter access for any one of a number of reasons. The Rocky Mountain Chapter does not totally subscribe to that fear. However, we strongly recommend that a full review be made before method of access to the most remote lakes is placed into action. It is imperative that the access procedures maintain the hightest regard for the wilderness resource. #91

The Rocky Mountain Chapter wishes to thank the EPA for the opportunity to respond to the Draft Environmental Assessment.

Sincerely,

Martin Sorensen
Chairman

29303 Spruce Canyon Drive, Golden, CO 80403 (303) 642-0224

LETTER #24

MAR 25 1985

Mr. Wayne D. Elson
EA Project officer - EPA

May 22, 1985

Mr. Elson,

I applaud the foresight of the EPA in undertaking the National Surface Water Study in assessing acid contamination of America's waters. Commonly such programs are undertaken only after crises are perceived, and possible action difficult or ineffective. There is little doubt that water separates our planet from others by providing the medium to both incubate and sustain life. The preservation of an uncontaminated and renewable hydrosphere is essential to the survival of every living thing inhabiting our planet. Contamination by acid deposition, "Acid Rain", is perhaps the most pervasive and immediately destructive of the lot.

I would like to cast my supporting vote for Alternative 1, helicopter access only, understanding the advantages as well as potential risks of such a plan. Certainly horse access only (plan 2) would be much more time and manpower consumptive as well as prohibiting good chemical analyses of water samples in some cases. Plan 3, helicopter and horse access is acceptable as an alternative.

Finally, the worst we can do is to do nothing. Alternative 5, no action, or the "ostrich" mentality will truly do a great deal of damage to any understanding of the stresses currently affecting our surface waters. I strongly support Plan 1 of the EPA National Surface Water Survey Western Wilderness Area Lakes. I would greatly appreciate being informed of the progress and conclusions of this study, and offer every wish for its successful implications in our national environmental policies.

Sincerely,

Michael Lee Wilson
Consulting Geologist
18 Montrose St
Bakersfield Calif.
93305

LETTER #25

SIERRA CLUB ...Oregon Chapter

March 21, 1985

Wayne D.Elson
EA Project Officer, M/S 443
U. S. Environmental Protection Agency
1200 Sixth Avenue
Seattle, WA 98101

RESPONSE TO
NATIONAL SURFACE WATER SURVEY
WESTERN WILDERNESS AREA LAKES
ENVIRONMENTAL ASSESSMENT

Iwould like to take this opportunity, on behalf of the Oregon Chapter of the Sierra Club, to comment on the National Surface Water Survey, Western Wilderness Area Lakes, Draft Environmental Assessment. The Sierra Club has set acid rain control as a high national priority, so we would of course like to see the NSWS successfully completed. On the other hand, the Club was created to protect and defend American wild lands, and has worked hard for the creation and preservation of our splendid system of designated wilderness. Because of the nature of our organization, our comments will deal specifically with activities within the state of Oregon.

We are uncomfortable about responding to this EA, not only because of our conflicting concerns about the problem, but because we feel we have been backed into a corner by the survey procedures. Here we are halfway through a major, multi-year study and we are told that while there are four theoretical ways to proceed, to choose any but the established way would be to invite possible failure.

An EA should be a proposal of a variety of serious, practical, possible alternatives, but despite the objective mentioned on page six, that "The EA should not be a justification of a specific alternative", this is precisely what we find. The description of Alternative 1 continuously infers that this is the only way to get satisfactory results. The descriptions of the other three alternatives repeatedly dwell on the reasons why they would be unsatisfactory, always holding the veiled threat that if the resulting data is imprecise, then (illogically) nothing will be done about the acid precipitation problem and the lakes will ultimately be damaged. #92

It is unfortunate that the study could not have been designed with more foresight, anticipating the western wilderness conflict and designing protocols, or even equipment, that could make non-motorized access and on-site testing more practical.

Despite all of this we support the selection of Alternative 2 and are confident that acceptable data can be obtained without subjecting wilderness to this serious level of motorized incursion. #93 There is no doubt that the writers of the EA understand the value of wilderness and the wilderness experience: some of the descriptions of wilderness values (sec. 3.1.1) and uses (3.1.2) are among the most sensitive and thoughtful that I have read. The explanation of the subtle but profound effects of helicopter intrusions on the spiritual backcountry experience, including the principal that the most serious effect would be on the fewest, most isolated persons, shows great depth of understanding. So because of this, and because the sanctity of wilderness is important regardless of recreational use, we feel that the EPA must follow the Forest Service direction that "wilderness values must be dominant, about compromise, and enduring." (p. 35) and do everything in its power to conduct the study by means other than helicopter access to the wilderness lakes. #94

Some specific comments:

1. The EA states on page 51 "...some people may see the action as setting precedent. If viewed as precedent, Alternative 1 could be seen to lead to other exceptions that could, in their totality, seriously damage short- and/or long-term wilderness character." This problem should not be minimized. Just as the EPA considers previous helicopter use as precedent for its proposed action, future proposals by agencies or individuals would certainly rely on the major precedent of 498 helicopter intrusions in a period of several weeks, if this action were allowed. At a time when the Forest Service is attempting to tighten up its policies on helicopter use in wilderness (p. 50) Alternative 1 would serve to open the floodgates of applications for exceptions and make the Forest Service's job of protecting the wildernss much more difficult. #95
2. As stated on page 76, some measurements would actually be enhanced by changing the protocol to fit the horse sampling procedures: "Extraction immediately. . .following collection would be preferable to the existing NSWS protocol..." #96
3. Oregon wildernesses are small enough in size to make nearly every lake accessable in the required time, including the fact that trail routes out of the wildernesses are almost all downhill. Our preliminary studies show none of the targeted lakes to be more than 15 miles from a trailheald (most are in the 4-10 mile range) and less than 25% include any off trail travel. This would place most in the "probable" range, as suggested by the chart on pages 81-84. #97

---

4. It is implied on page 75 that if at least 40 of 50 lakes in each strata were able to be sampled the results would be statistically acceptable, and even less than that could still be useful. This, and the fact that 18% "extra" lakes are built into the sample (15 strata x 50 lakes = 750, sample total 888) would make it appear that it would not invalidate the study if a few lakes were found to be inaccessable without aircraft. #98
5. The Oregon Chapter of the Sierra Club proposes to help the EPA sampling team in any way possible (probably with hikers and packers) to render accessable any lakes off of horse trails, thus increasing the number of lakes tested and improving the statistical sample.

   To answer some of the objections to this plan listed on page 8 "alternatives not analyzed":

   A. The EA suggests that volunteers could not be reliably used, but the possibility of training (the training period is described as being only a month or so long) or even hiring (thus ensuring responsibility) experienced backpers and outdoors people is ignored. Or the volunteers could be used as packers, accompanying EPA technicians, under the direction of a paid coordinator. Either way the volunteer role would be limited to only a small percentage of lakes. #99

   B. On the question of liability, the Sierra Club has its own liability insurance on official Club outings, and hiking and packing teams could be organized as part of the continuing tradition of protecting the wilderness through service, or work party, outings. #100

   C. The question of whether or not the necessary equipment could be carried on foot and over what type of terrain is never adequately addressed in the EA. The actual size and wieght of such items as the Hydrolab or the Van Dorn sampler is not given, only the general description of "bulky and heavy". Some might consider the 50-60 pound beackpacks regularly carried by long distance hikers are bulky and heavy. The EA admits the possibility of carrying the equipment: "it might be possible to sample a few lakes [on foot] a short distance from helicopter landing sites" (page 8) or from the end of the horse trail. And how far is a "short distance"? A mile and a half? #101

For the above reasons the Oregon Chapter of the Sierra Club believes that the wilderness must and can be preserved, while the required data is obtained, using Alternative 2, with the assistance of volunteers. The Oregon Chapter offers to participate in this volunteer program. The EA states that Alternative 2 could take another year to implement, which would give additional time to iron out logistical and coordination details.

Thank you for the opportunity to comment.

Sincerely,

Joseph Hinton

Joseph Hinton

Acting Wilderness Coordinator
Oregon Chapter, Sierra Club

3525 S. E. Milwaukie Ave.
Portland,Or 97202

LETTER #26

MAR 25 1985

[redacted]
Governor

[redacted]
Director

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Mail Stop PV-11 • Olympia, Washington 98504 • (206) 459-6000

March 21, 1985

Mr. Wayne D. Elson
EA Project Officer, M/S 443
U.S. Environmental Protection Agency
1200 Sixth Avenue
Seattle, WA 98101

Dear Mr. Elson:

Thank you for the opportunity to comment on the environmental assessment for the "National Surface Water Survey, Western Wilderness Area Lakes". Generally, we are satisfied with the proposed analytical procedures, however, we do have some concerns.

The issue of disruption in the wilderness areas as a result of helicopter use may cloud over the real question of what is the present or potential impact of acid rain in the Western United States. With public opinion concerning the sensitivity of wilderness lake areas at a high level, all possible methods of sampling should be carefully evaluated. #102

One alternative to the use of helicopters or horses would be a modified version of Alternative 3. The lakes outside the wilderness areas could be sampled by helicopter as originally planned, while the wilderness area lakes could be accessed by foot. A crew of two to three people should be able to sample two or three lakes per day within a close region. Each lake would be sampled from a small inflatable raft which would be transported to the lake by one of the members. A location would be designated for helicopter pick-up at the end of each day. If the pick-up point is on a ridgetop, the helicopter need only approach the areas for a matter of seconds and samples could be dropped in a basket suspended from above. With this method, the impact is minimal both from helicopters and a human stand point. This method should also reduce the cost of sampling. #103

One aspect of using horses which was not considered is that numerous lakes in the Cascades will be dangerous to approach with horses. In those cases, all sampling equipment and boats would have to be carried down to the lake and back out again anyway. #104

Some brief calculations based on the four options described in this assessment indicate that each sample collected will cost $8,000 to $14,000, depending on the option chosen. This cost appears to be extremely high. This summer the Department of Ecology will be collecting and analyzing 40 samples for $21,825 or about $545 per sample. This program does not #105

use helicopters, but it does indicate that sampling can be done for less money. #105 (CONT)

We urge you to consider the alternative outlined above. It would indeed be unfortunate if the positive momentum of public awareness and interest concerning acid rain were to be minimized by the necessity to justify helicopter use. There may be an opportunity to use the Washington Conservation Corps (WCC) which would definitely cost less. The WCC program was created by the 1983 Legislature to employ young adults. The program is managed by the Department of Ecology, and we are currently conducting projects in cooperation with other Federal, state, and local agencies. #106

If you have any question, please call Mr. David Roberts of our Air Programs Office at (206) 459-6712, or Ms. Linda Bradford, Conservation Corps Program Manager at (206) 459-6131.

Sincerely,

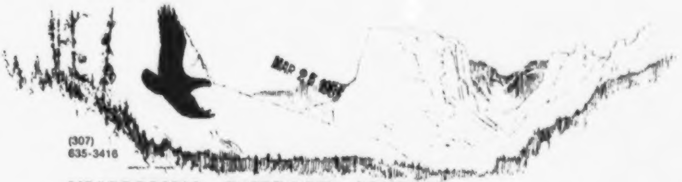
Greg Sorlie

Greg Sorlie, Supervisor
Environmental Review and
Permit Management Section

GS:pk

cc: David Roberts
Linda Bradford

LETTER #27



MAR 28 1985

(307)
635-3416

WYOMING OUTDOOR COUNCIL
P.O. Box 1184 1603 Capitol Cheyenne, WY 82003

BOARD OF DIRECTORS

PRESIDENT
John Perry Barlow
Cora, Wyoming

VICE PRESIDENT
Sally Gordon
Kaycee, Wyoming

SECRETARY
Donnie Freeman
Mountain View, Wyoming

Sandy Hornor
Laramie, Wyoming

Larry Means
Lander, Wyoming

Muffy Moore
Cheyenne, Wyoming

Chris Plant
Rock Springs, Wyoming

Jack Pugh
Green River, Wyoming

Amy Spiekerman
Lander, Wyoming

Bruce Thompson
Cora, Wyoming

MEMBER ORGANIZATIONS
Travelle Izaak Walton League
Greater Yellowstone Coalition
National Outdoor Leadership School
Wyoming Sierra Club

SUPPORTING ORGANIZATION
Northern Lights Institute

March 21, 1985

Mr. Wayne Elson
EA Project Officer, M/S 443
U.S. Environmental Protection Agency
1200 Sixth Avenue
Seattle, WA 98101

Dear Mr. Elson:

The Wyoming Outdoor Council (WOC) has reviewed the National Surface Water Survey-Western Wilderness Area Lakes Draft Environmental Assessment (EA) and respectfully submits the following comments.

WOC endorses EPA's selection of Alternative 1 (Use of Helicopters Only) as the preferred alternative for conducting the survey. We are firmly convinced that the only practical, reliable means of retrieving samples from more remote lakes within the recommended holding times for certain analytical procedures is by the use of helicopters. It is also apparent to us that helicopters provide the only dependable means of accessing the number of selected lakes within the time available. Perhaps most important, the use of helicopters would reduce to the practical minimum the potential for variability due to sampling procedures and technique which is inherent in a survey of this type. Helicopter access would also help ensure the comparability of wilderness and non-wilderness lake data.

It is WOC's primary concern that this survey be conducted, and that the data obtained be as reliable and above reproach as possible. For this very basic reason we find alternatives 2 and 3 objectionable. The numbers of sampling technicians required under both alternatives, and the mix of sampling procedures necessitated by alternative 3, introduce variability which would almost certainly reduce the accuracy and precision of the data obtained. Furthermore, the logistics of coordinating helicopter and packing operations under alternative 3 increase the risk of delays in getting samples to the lab (due to the potential for timing problems, inability to communicate by radio, etc.). The necessity to resample a lake

Mr. Wayne Elson
March 21, 1985
Page 2

would increase the time required to complete the survey. The use of helicopters would at least minimize the time required to revisit a lake. If a valid sample was not collected from a lake and the lake was not revisited, the statistical design of the survey would be jeopordized.

WOC has recently learned that another proposal for accessing the lakes has been submitted to EPA. We feel that in order for this or any other proposal to be officially considered it should receive the same type of comparative evaluation as that conducted in the EA. Nevertheless, its our current opinion, based on available information, that our criticisms of alternatives 2 and 3 would apply to this latest proposal as well. It would be difficult, if not impossible, to ensure the logistical feasibility of ground access by backpack teams, more sampling personnel would be involved than in the helicopter option, and the numbers of people in wilderness areas and hence the potential for disturbance to recreational wilderness users would be increased. #107

WOC finds alternative 4 totally unacceptable. Of greatest concern in the West is the potential for acid deposition impacts in Class I areas. The Bridger and Fitzpatrick Wilderness Areas in Wyoming's Wind River Mountains are prime examples of susceptible Class I areas. The results of the survey must be applicable to such areas; therefore, wilderness lakes must not be excluded from the survey.

For all the reasons stated above, WOC supports alternative I. We are not unmindful of the potential short term impacts of helicopter use, however, and urge EPA to employ all possible measures to mitigate such effects. We refer you to our letter of January 10, 1985, to Mr. Ron Lee. We also wish to reiterate at this time our request that EPA hold meetings in as many locations as possible to afford the public an opportunity to comment on the conduct of the survey in specific areas.

One final note about helicopter usage. It should be made eminently clear to the public that authorization of the use of helicopters for this survey, sets no precedent, i.e., that it constitutes no implied approval for similar requests in the future. Although authorization is the responsibility of the federal land managers, EPA can help ensure the correct public perception by appropriately designed informational compaigns. #108 Finally, WOC urges EPA to scrupulously review the proposed sampling protocol particularly for the criticol DIC and extractable aluminum tests, to ensure that they will hold up under scientific scrutiny. For example, if extracting aluminum in the field is feasible and would increase the accuracy of the subsequent analysis, such procedure should be adopted. The additional equipment required for the extraction should be carried in the helicopter. It is essential that the data collected in this survey be generally accepted by land managers, regulatory agencies, scientists, industry, and public interest groups. It must not be disputable on the basis of sampling or analytical protocol. #109

In summary, WOC believes that the urgent need for data on the acid deposition sensitivities of high mountain western lakes mandates the use of helicopters for accessing wilderness lakes, and further that the potential long term benefits of acquiring these data override the short term impacts of helicopter operation in wilderness areas. It is our opinion that the Wilderness Act

Mr. Wayne Elson
March 21, 1985
Page 3

authorizes such use. We do not believe that an individual wilderness area must we threatened by acid deposition before helicopter access to that area could be authorized. Acid deposition impacts to any wilderness area damage the system as a whole. Furthermore, the date comparability considerations of this study dictate that all lakes be accessed and sampled in the same fashion. Future management decisions which may be necessary to prevent and/or mitigate acid deposition effects, and thus preserve wilderness character, will depend on the availability of information obtainable only from a survey of this type combined with more intensive followup studies.

We commend EPA and ORNL personnel for their part in preparation of this thoughtful and thorough environmental assessment, and thank you for the opportunity to comment. If you have any questions, don't hesitate to contact us. Please keep us informed of all future action in this matter.

Sincerely,

Debra Beck

Debra Beck
Executive Director

DB:mw

cc: Mr. Robert M. Read
Mr. Max Peterson

LETTER #28

I

MAR 21 1985

3/20/85

Dear Mr. Elson,

I am writing a short letter concerning your draft Environmental Assessment on the National Surface Water Survey of Western Wilderness Lakes. First - I feel the study is important and should be completed. Second I do not feel the study should be done with the use of helicopters.

Alternatives to the use of helicopters should be identified and pursued. #110 Helicopters do not demonstrate the utilization of primitive skills which is of utmost importance to the preservation of our wildland resource. There is to much air traffic over many wilderness areas, especially in the Selway Bitteroot of which I'm familiar. Air traffic is not a minor impact when you consider all aspects versus your point that one flight will not impact. Your use is a part of many, that already occurr.

(over - please)

The Wilderness Act declares that "to secure for the American people of present and future generation the benefits of an enduring resource of wilderness." Your proposal with helicopt will effect the long term quality of the wilderness systems. The politics of wilderness management will become more susceptible to exceptions not to mention users encountering the helicopters. #111

Reasonable alternatives have been demonstrated in our area. Hiking samples to helispots outside wilderness and at lakes this is not feasible - find alternative & representative lakes. #112

Support the traditional direction of wilderness management by not using helicopters. The wilderness system future depends on it.

Thankyou for the opportunity to comment.

Sincerely,

Bob Oset

LETTER #29

5515 42rd Ave. NE
Seattle, WA 98105
March 21, 1985

Wayne D. Elson
EA Project Officer, M/S 443
U.S. Environmental Protection Agency
1200 Sixth Avenue
Seattle, WA 98101

MAR 25 1985

Dear Mr. Elson:

I'm sending comments in response to the sampling methods proposed in the draft Environmental Assessment of the Western Wilderness Area Lakes Surface Water Survey. I wholeheartedly support the survey and its goals, but do not believe violation of the Wilderness Act is necessary to procure water samples. Alternatives to helicopter sampling have not been sufficiently considered.

Even given water volume and time constraints, on-foot delivery of samples is feasible. Here are several possibilities:

1) Relays of hikers. This could be organized by the Mountaineers, Sierra Club, or wilderness volunteers, such as VOW.
2) Use of fast individual hikers. I know several backcountry rangers and friends who regularly make rapid hikes or daytrips with light to moderate loads, at speeds of 4 to 5 miles per hour. Mountain Rescue teams could recommend individuals.
3) Use of ultramarathoners and mountain runners. I have seen runners on mountain trails who pass me both going and coming in an afternoon. A running organization could supply you with names of individuals. #113

Basing hiking times on guidebook estimates is inaccurate, as these times are meant for average recreational hikers with full packs, not organized, mission-oriented teams. #114

Thank you for your consideration. Helicopter sampling in wilderness areas could set a precedent for other motorized infringements on places that were set aside to be free from them. #115

Sincerely,

Robert V. Walker

Robert V. Walker

LETTER #30

THE COLORADO MOUNTAIN CLUB

The Colorado Mountain Club

TELEPHONE
922-8315

2530 WEST ALAMEDA
DENVER, COLORADO 80219

OFFICE HOURS MONDAY THRU FRIDAY 9 A.M. to 2 P.M. AND MONDAY, TUESDAY AND THURSDAY EVENINGS 7 TO 9 P.M.

MAR 25 1985

Wayne D. Elson
EA Project Officer, M/S 443
U.S. Environmental Protection Agency
1200 Sixth Avenue
Seattle, WA 98101

March 21, 1985

Dear Mr. Elson,

Following are comments from the Colorado Mountain Club on the draft Environmental Assessment for the National Surface Water Survey Western Wilderness Area Lakes.

1) CMC comments on the scoping document requested that EPA more thoroughly explain the sampling methodology necessary to complete the survey and the alternative logistical means of obtaining samples. We feel that EPA responded to this request. It is clear that in order to obtain uniform results and results which can stand up in court, helicopter access is the only satisfactory means. The CMC supports this alternative. We believe EPA could strengthen its case by explaining in more detail the safety and logistical problems associated with using horses. #116

2) Our major comments on the EA are represented by the enclosed letter from the Club to Max Peterson of the Forest Service urging Chief Peterson to grant the helicopter access.

3) The final point we wish to make is that this EA has involved the user groups. We appreciate the fact that EPA has gone to great lengths to obtain public comment. This EA and the process followed by EPA should set a precedent for dealing with requests for motorized access into wilderness.

Sincerely,

Anne Vickery

Anne Vickery
Conservation Director

Enc.

GROUPS: ASPEN • BOULDER • DENVER • DENVER JUNIOR • DENVER WILDERNESS KIDS
EL PUEBLO • ENOS MILLS • FORT COLLINS • LONGS PEAK • PIKES PEAK
SAN JUAN • WESTERN SLOPE • MT ELBERT • GLENWOOD SPRINGS

THE COLORADO MOUNTAIN CLUB

The Colorado Mountain Club

GROUPS: ASPEN • BOULDER • EL DORA • DENVER JUNIOR • DENVER WILDERNESS KIDS • EL PUEBLO
ENOS MILLS • FORT COLLINS • LONGS PEAK • PIKES PEAK • SAN JUAN • WESTERN SLOPE

TELEPHONE
922-8315

2530 WEST ALAMEDA
DENVER, COLORADO 80219

OFFICE HOURS MONDAY THRU FRIDAY 9 A.M. to 2 P.M. AND MONDAY, TUESDAY AND THURSDAY EVENINGS 7 TO 9 P.M.

Max Peterson, Chief
U.S.D.A. Forest Service
P.O.Box 2417
Washington, D.C. 20013

March 14, 1985

Dear Mr. Peterson,

I am writing as Conservation Chair and President-Elect of the Colorado Mountain Club to urgently request that you grant the Environmental Protection Agency helicopter access to the wilderness areas in order to carry out the western area lakes portion of the National Surface Water Survey.

The Colorado Mountain Club is a Colorado recreation and conservation organization of over 8,000 members. We have 14 groups in 12 cities and towns across the state. Our members use the National Wilderness areas extensively for hiking, backpacking, climbing and skiing. The Colorado Mountain Club has been a major force in the designation of Colorado Wilderness areas in 1964 and 1980. We have participated with the Forest Service in many meetings, field trips and activities designed to improve wilderness management. We also participated extensively in the development of the Colorado PSD regulation during which proceedings we strongly supported the role of the Forest Service as a Federal Land Manager with an affirmative responsibility to protect Air Quality Related Values.

We understand the concerns of the Forest Service that granting EPA helicopter access could set a precedent for general helicopter access into wilderness. The Colorado Mountain Club would strongly oppose any such concept of a general, casual motorised access into the National Wilderness System. However, the EPA request is for a one-time entry and is for an activity which will provide a lake-water baseline which in the future will be essential to protecting the wilderness characteristics. We have been assured by Ed Coat, EPA Field Manager for the Survey, that Phase II and Phase III of the survey will not involve helicopter access to the wilderness but can be completed by backpacking or horsepacking into the lakes, camping for a period of time and doing the necessary lab analysis on site.

As you may know, Colorado currently has 24 areas in National Forests in the National Wilderness System. These areas attract visitors from across the U.S. and from foreign countries and they are a considerable tourist attraction for the state. The Colorado tourism industry, much of which is based on the recreational opportunities in National Forests and National Parks brings in over 4 billion dollars annually. One billion dollars of this is attributed to hunting and fishing. Some of the fishing takes place in the high altitude wilderness lakes in drainages that are known to be poorly buffered and therefore sensitive to acid deposition. The acidification of some of the wilderness lakes in the state could quickly affect the reputation of the state as a prime fishing area. The EPA baseline survey is one vital tool in the PSD permitting process which requires adequate controls, modeling and monitoring to prevent such an occurrence.

Max Peterson
March 14, 1985
Page Two

The state of Colorado is currently awaiting approval from EPA to take over the PSD program. The Colorado PSD regulation was developed after an extended hearing involving industry, environmental, state and federal interests. One issue was the validity of data used to determine impacts to Air Quality Related Values. A key ingredient of the EPA proposal is that the data be gathered in such a manner as to stand up in court. During the past few years akalinity data has been gathered from the Flattops and Mt. Zirkel Wilderness Areas by backpacking and horsepacking. The Colorado Division of Wildlife which is concerned about impacts to trout and other aquatic life has questioned whether this data will stand up in court because of the time delay in processing the samples. The CMC wants the data gahtered by the EPA to be free of any such questions. We believe that the EPA proposal to gather the data by helicopter solves this problem.

Members of the CMC who have had extensive experience with horsepacking support the EPA's conclusion that it is, logistically, a difficult undertaking to sample the 424 wilderness lakes by horse within the time [illegible] necessitated by the study. We feel that the elements of risk and delay are considerably increased by using horses.

You should be aware that Colorado is not free from acid deposition impacts. Researchers at the Rocky Mountain Biological Laboratory (the Mexican Cut lakes above Cothic, Co. in the Gunnison National Forest) are reporting that they observed the short-term acidification in their study lakes during snow-melt last summer. The pH in one lake dropped to 4.9. This occurred at the time the salamander eggs were hatching. According to John Harte, the principal researcher, this may explain why the salamanders have failed to successfully reproduce for the last 2 years.

In conclusion, I feel that the practical, on-the-ground experience of the Colorado Mountain Club as a user of the wilderness and our work with wilderness management, wilderness designation and qir quality issues gives our organization an excellent insight into the activities and the means of carrying out these activities which are necessary to preserve and protect our wilderness areas in their "natural condition...unimpaired for future use and enjoyment as wilderness".

We again urge that you grant EPA helicopter access for the survey. We believe with the proposed EPA technique the Forest Service, the EPA, the states and the user public will have a baseline which will stand up in court, and, which can help the Forest Service to carry out its responsibility to protect wilderness characteristics and Air Quality Related Values.

Sincerely,

Al Ossinger

Al Ossinger, Chairman
Conservation Committee
President-Elect

cc. Governor Richard Lamm
Jim Torrance

United States Department of Agriculture
Forest Service
Washington Office
12th & Independence SW
P.O. Box 2417
Washington, DC 20013

Reply to: 1530

LETTER #31

Date: APR 3 1985

Mr. L. Edwin Coate
Deputy Regional Administrator
U. S. Environmental Protection Agency
1200 Sixth Avenue
Seattle, WA 98101

Dear Mr. Coate:

We appreciate EPA's effort in developing the March 1 Draft Environmental Assessment (EA) concerning the National Surface Water Survey - Western Wilderness Area Lakes. Attached is our response to this Draft EA. Our staffs met on March 28 and 29 to discuss these comments, to improve the adequacy of this draft, and to review the public comments.

Sincerely,

DAVID G. UNGER
Director of Watershed and Air Management

Enclosure

RECEIVED
APR 9 1985
OFFICE OF
REGIONAL ADMINISTRATOR

FS-6200-11 (8-80)

APR 11 1985

Comments on Draft Environmental Assessment
NSWS - Western Wilderness Area Lakes

Page iii - First paragraph - As currently written the Summary and Conclusion is a biased justification to use helicopters without regard to the intent of the Wilderness Act. The need for this EA in light of the Wilderness Act prohibition of mechanized equipment including helicopters must be clearly stated. Therefore, add the following as the second paragraph of the Summary and Conclusions and the Introduction. #117

"The Wilderness Act of 1964 severely limits the use of mechanized equipment in wilderness The following exceptions are the only provisions in the Wilderness Act under which helicopters could be authorized. #118

1. If necessary to meet the minimum requirements for administration of the area for purposes of wilderness, [Section 4(c)].

2. The gathering of information about resources if such activity is carried out in a manner compatible with the preservation of the wilderness environment, [Section 4(d)(2)].

3. As specifically provided for concerning the establishment of water facilities when approved by the President, [Section 4(d)(4)(1)].

This assessment documents the impact of different methods of access for sampling on wilderness and on the objectives of the national lake survey."

Page iii - "Sampling protocols established . . . ." The Western Lake Survey is a distinct subset of the NSWS. The sampling protocols can be changed, However, the effect this change would have on NWSW objectives needs to be quantified. #119

Page iii - Mid-page "(2) The date collected . . ." The need for this level of precision (i.e. 0.01 of mg 1 -1 figure 2.1-4 page 18) for a national assessment should be more fully explained. The quality assurance and quality control protocols are more precise than usual for a national assessment. The selected protocols seem more suitable for nutrient cycling and energy flow experiments within small watersheds. #120

Page iv - The time frame criteria of 7 hours should not be the only criteria. Some guiding philosophy concerning protecting the local wilderness values overriding the need for economy and convience should be added. This alternative could also have different sampling protocols to remove most of the time constraints. #121

Page iv - Alternative 4 (no action) needs to be a realistic way of attaining the NSWS goal. This alternative should show the effect of not sampling wilderness lakes but still achieving the same NSWS goal by adjusting or expanding the sampling design. As currently described Alternative 4 is not a viable alternative for achieving the NSWS objectives. #122

Page v - Next to last paragraph - Helicopters are not "in keeping with the spirit and letter of the Wilderness Act" when other means of access are available and meet the need. This statement should be deleted. #123

Page v - Last paragraph - Disagree. This is purely an assumption and a presumption. #124

Page xiii - Alternative 4, if it were a viable alternative, would show why it is necessary to sample lakes in western wilderness areas when there are so many similar lakes available outside wilderness. #125

Page 2 - The Alternatives need to be compared against NSWS objectives stated in the last paragraph on this page. #126

Page 5 - Last paragraph - All Wildernesses and National Parks are not class I Federal Areas. #127

Page 6 - First paragraph - The information gathered in the survey may be useful to a limited extent in managing wilderness areas although it probably will not be specific enough for management decisions on individual wildernesses. For us to justify helicopter use for wilderness management reasons, it must be shown that we cannot obtain the information we need by means compatible with wilderness. #128

The law prohibits helicopter use except as necessary to meet minimum requirements for administering the area for wilderness purposes. What data does EPA plan to collect that the wilderness manager must have that requires the use of helicopters? #129

Page 8 - A discussion concerning changing the sampling design, parameters to be measured, protocols and other sampling methods considered to meet the intent of the Wilderness Act, and the basis for their rejection should be added here. The impact of choosing protocols without time constraints on attaining the objective of the NSWS is not fully discussed.

No change in sample design was considered. No change in lakes selected for sampling was considered. The idea of choosing lakes close to the wilderness boundaries so that ground crews can bring samples to helicopters outside wilderness for rapid transport of samples is not addressed. Also not discussedis the option of choosing chemical sampling only needed for the basic mission of identifying acid lakes in wilderness and obtaining the more detailed chemical information outside wilderness. Sampling the most critical "short holding time" variable outside of wilderness to accommodate wilderness values is not discussed. The only accommodation the NSWS has made to consider the intent of the Wildernesss Act has been method of accesss. The impact of changing access on the objectives of the NSWS is not quantified (Table S-2 does not include the objectives of the NSWS described on page 2). The reason for this seeming lack of concern for wilderness must be explained in relationhip with the objectives of the survey by any sampling design. #130

Page 9 - The evaluation criteria used in selecting the current sampling protocols plus peer review of the selected sampling design and protocols should be discussed. The peer group review process and response to the draft NSWS study plan should be referenced or included in the appendix. #131

Page 13 - The percent of lakes inside and outside wilderness and the percent of sampling planned for each category by subregions and alkalinity class should be added to Table 2.1-1 to display the randomization and objectivity of the lake selection process. The document does not dispell the latent belief that lake selection was aimed at wilderness areas to reduce other unmentioned influences or variables. #1

Page 16 - The importance of the measurement of monomeric aluminum in relationship to objectives of NSWS described on page 2 is not addressed. It appears that the main argument for using helicopters is the need to preserve samples for measuring monomeric aluminum within 12 hours after samples are collected. We hear conflicting reports from the scientific community on this. Alternative field protocols are used by numerous researchers. #

Monomeric aluminum is time, temperature, DIC, and pH dependent. Western lakes seldom have less than 6 pH. The sample season will be cold enough to inhibit chemical reaction. The final EA must display strong evidence that data on monomeric aluminum is needed, that the time constraints are real and there are not realistic alternatives other than motorized access.

Questions concerning the lack of scientific consensus on the chosen protocols, the belief by some that the preferred protocol may be too precise for a national background survey, the suggestion that the preferred protocol for monomeric aluminum can be revised to eliminate the need for helicopters and the effect of lakeshore protocols for monomeric aluminum on the objectives of the NSWS need to addressed and quantified in the final EA.

Page 27 - The process and criteria for selecting which lakes would be accessed by helicopters should be established. Appropriate criteria are discussed throughout the document for wildlife sensitivity, hunting seasons, visitor-use patterns, safety considerations, and others, but these need to be specified as part of the alternative in the final EA so both EPA and the wilderness manger have guidance. A guiding thought to include would be for the local situation concerning protecting wilderness values will take presidence over statistical considerations of the survey including economics and conviences. #

Page 37 - Add a paragraph (3.1.4) to highlight the steps considered and those included in the NSWS sampling design to preserve the wilderness environment and to protect the wilderness values of natural conditions and outstanding opportunities for solitude. #

Page 47 - First paragraph - Problems with weather, icing, sudden storms, etc., that would hinder different types of access and impact human safety should be included here. #

Page 49 - The EA recognizes the need to tailor the sampling activities to each site. However, guidelines and criteria concerning when and how this tailoring will occur with the local land manager, need to be detailed in this programmatic level analysis. The effects of the alternatives cannot be fully displayed until something is known about these site-specific procedures. #

Page 68-69 - This clearly states that sampling will not be sufficient to understand (characterize) an individual lake. This means the data is not satisfactory for wilderness management of specific lakes and yet the EA alludes to meeting the need of the wilderness management. The concept of protecting the wilderness system must be based on protecting each wilderness area. Wilderness Act prohibits use of aircraft including helicopters if such use is beyond the minimum needed for management including emergencies. #138

Page 69 - The proposed sampling design was selected to give a statistical picture of the nation's lakes and not wilderness lakes by subregion and alkalinity class. The expected error in data for wilderness lakes by subregion and alkalinity class should be included to support the concept of providing data needed for wilderness management. The need to gather this data by helicopter is still in question. #139

Page 74 - The EA fails to establish the need to collect data using helicopters except for convenience and economy. The problem of QA/QC of the resulting statistics for regulatory purposes should be quantified. This may be the real reason for the need for helicopters. The problem with historical data in confrontation with different polluters and the need for this precise data for writing new legislation needs to be clearly described. #140

The public involvement process used during the development of the EA should be described. [Please note: EPA's purposeful failure to highlight the conflict with the Wilderness Act in the Draft EA's Summary and Conclusion, may have invalidated the public involvement effort since the real reason for this EA was masked by the furor over acid rain.] #141

LETTER #32

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

APR 11 1985

ER 85/321

APR 8 1985

Wayne D. Elson
EA Project Officer, M/S 443
U.S. Environmental Protection Agency
1200 Sixth Avenue
Seattle, Washington 98101

Dear Mr. Elson:

The Department of the Interior has reviewed the draft environmental assessment for the National Surface Water Survey - Western Wilderness Area Lakes and has the following comments.

There appears to be some inconsistency in the summary data provided in table S-1. For example, table S-1 now indicates that Alternative 4 (no sampling) would have only "minor" negative impacts on long-term wilderness protection but arguments presented on page 87 suggest that failing to collect samples in wilderness areas could lead to severe, long-term indirect impacts. Perhaps table S-1 should reflect only positive versus negative impacts without making reference to the magnitude of those impacts. #142

The final assessment should note that entry into wilderness areas on Indian Reservations is controlled by the tribe (25 CFR 265). Any entry, therefore onto tribal land for the purposes of this study must be approved by the tribe. #143

We support the proposed sampling effort since we believe it is important to understand the acid deposition problem in wilderness areas. However, we have concerns about the use of helicopters to carry out this effort in specific areas of the National Park System included in this study. Large portions of the parks noted in Appendix 3 are now "proposed wilderness" and should be so identified in the assessment. These areas that are proposed are managed as wilderness until a final decision is reached. The final assessment should recognize these limitations. #144

We want to emphasize the importance of closely coordinating sampling proposals in units of the National Park System (NPS) with Park Superintendents and the need to obtain permission from them prior to sampling any lake within a park area. Each involved Superintendent must first determine the amount and type of access which is appropriate and allowable under provisions of the Wilderness Act, other legislation and National Park Service policies. Based on the activity the Superintendent proposes to allow, each Superintendent will then consider whether your programmatic environmental assessment must be further supplemented with site-specific environmental documentation by the NPS. #145 The concerns raised in the letter sent to you by the NPS dated February 11, 1985, (copy enclosed) have not been addressed in the draft environmental assessment. We strongly urge you to consider these previous comments along with the additional specific comments below in the final assessment. #146 You should also immediately establish communication with the three NPS regional office personnel listed in the letter sent to you in February. They will work with you and the Park Superintendents in the consideration of your access requests. All sampling activities must take into consideration sensitive areas and the timing of sampling to minimize impacts to visitors and natural resources. Careful consideration must also be given to other water quality studies and investigations related to the proposed sampling effort in order to avoid duplication. #147 #147 (cont)

Specific Comments

Olympic National Park

At Olympic National Park, the alternative preferred by EPA (Alternative 1) is the least acceptable to the NPS. The analysis of wilderness impact in the assessment centering primarily on horses versus helicopters, does not correspond to the analysis of the situation at this particular park by the NPS. More specifically, NPS believes that in some instances, the impact of using horses to carry out the sampling effort at Olympic National Park can be less than the use of helicopters. This issue should be resolved. #148

Another alternative which was not considered in the assessment is foot access only. While this may not represent a practical alternative in other wilderness areas, we believe that at Olympic National Park, three of the four lakes proposed to be sampled are easily accessible on foot within the time constraints described in the assessment. #149

Olympic National Park would be willing to furnish the necessary logistical support with backpacking "Sherpas" (or with park-owned horses and mules if necessary) to sample the three accessible lakes (Boulder Lake, Hoh Lake, and Lunch Lake). However, the fourth lake (Lake 4B3-056), an unnamed lake in the Rustler drainage, is in an inaccessible, remote, and totally undeveloped area where foot access is difficult, horse access impossible, and helicopter access inappropriate. We prefer that this lake be deleted from the survey (as long as such deletion does not invalidate the entire sampling process). #150

Lake 4B3-032 is not located in Olympic National Park: it is located in the Buckhorn Wilderness of Olympic National Forest. #151

Mount Rainier National Park

Both lakes proposed to be sampled by EPA in Mount Rainier National Park are known to have goat populations nearby. Therefore helicopter crews sampling these lakes must contact the Park Superintendent before entering the park so that park staff may instruct the pilot regarding preferred routes and approaches to these lakes. We believe that this consultation will permit the proposed sampling activity to be accomplished with minimum disruption to nearby goat herds. #152

We hope these comments will be helpful to you.

Sincerely,

Bruce Blanchard, Director
Environmental Project Review

Enclosure

cc: Robert M. Reed, Oak Ridge National Laboratory

February 11, 1985

L54 (479)
ER-85/132

Mr. Wayne Elson
EIS and Energy Review Section, M/S 443
U.S. EPA, Region 10
1200 Sixth Avenue
Seattle, WA 98101

Dear Mr. Elson:

The National Park Service (NPS) has reviewed the Environmental Protection Agency's (EPA's) Preliminary Draft Environmental Assessment for Proposed Sampling of Western Wilderness Area Lakes Using Helicopters during Phase I of the National Surface Water Survey. We offer the comments indicated below and in the enclosures to this letter on a technical assistance basis.

NPS supports the proposed sampling effort since we believe it is important to understand the acid deposition problem in wilderness areas. However, we have concerns about the use of helicopters to carry out this effort in specific areas of the National Park System included in this study. We have identified these specific concerns in enclosures to this letter.

I would like to emphasize the importance of closely coordinating sampling efforts in units of the National Park System with our Park Superintendents and the need to obtain clearance from them prior to sampling any lake within a park area. We also request that all sampling activities take into consideration sensitive and natural resources. Careful consideration should also be given to other water quality studies and investigations related to the proposed sampling effort in order to avoid duplication. #153

If you have questions related to these comments, I suggest that you contact the following individuals in our Regional Offices (or if you have questions with respect to a particular park unit, please contact the Superintendent of that unit):

Pacific Northwest Region: Ron Myra FTS 399-5366 (Seattle)
Western Region: Jim Huddlestun FTS 556-8313 (San Francisco)
Rocky Mountain Region, Bob Kasparek FTS 776-8720 (Denver)

Thank you for this opportunity to provide technical assistance.

Sincerely,

/sgd/ Thomas W. Lucke

Thomas W. Lucke, Chief
Water Resources Division

Enclosures

cc: Robert M. Reed, Environmental Sciences Division, Oak Ridge National Laboratory

bcc:		
	GLAC - Supt.	YOSE - Supt.
	GRTE - Supt.	PNR - Hyra/Nordgren
	LAVO - Supt.	RMR - Kasparek/Hermance
	MORA - Supt.	WR - Huddlestun/Cherry
	OLYM - Supt.	479 - Kimball, DEN
	ROMO - Supt.	475 - Christiano, DEN
	SEKI - Supt.	499 - Herrmann/Baron, FTC
	YELL - Supt.	762 - Verstraete, WASO

PNP:DKimball:scp:2/11/85:221-5341:0211KIM7.MM1

ENCLOSURE 1

NATIONAL PARK SERVICE COMMENTS

PRELIMINARY DRAFT ENVIRONMENTAL ASSESSMENT (PDEA)
PROPOSED SAMPLING OF WESTERN WILDERNESS LAKES USING HELICOPTERS
PHASE 1, NATIONAL SURFACE WATER SURVEY

General Comments

1. Page 5, first sentence: The PDEA states "Concerns associated with National Parks are assumed to be similar to those for wilderness areas and a separate analysis is not presented." Appendix A which identifies lakes within the National Park System to be sampled in the proposed effort notes them as "Not In Wilderness." It should be noted that large portions of these parks are now "proposed wilderness" and this should be indicated in the EA. The Department of the Interior, manages proposed wilderness as wilderness to maintain its integrity until a final decision is made. Thus, those limitations noted in the Wilderness Act also apply to these areas of the National Park System. #15

2. Some of the lakes designated for sampling in Parks are in areas of high visitor use. Mitigation measures should include adjusting sampling times to avoid periods of heavy visitor use. Generally, this would be after the first week in September and on weekdays. The respective Park Superintendents should also be consulted regarding optimal sampling times during the day. #15

3. The EA should also consider impacts on aquatic life from helicopter landings on lakes and also the impacts of helicopter exhaust. (The potential for sample contamination by helicopter exhaust should also be considered.) A possible alternative which should be evaluated is landing a short distance way and walking to the lake to obtain a sample. #15

4. Information concerning this sampling program should be given to each backcountry user group (or at least made available to them). EPA should provide this information to NPS for distribution. #15

5. Copies of all data on individual lakes, including aerial photos, should be provided to the respective parks for their files. A complete set of data resulting from this sampling effort should be forwarded to the NPS Water Resources Division in Fort Collins, Colorado. #15

6. Close coordination should be maintained with our Park Superintendents in carrying out this effort. We believe this coordination would also be helpful to EPA and its contractors since many high mountain lakes are difficult to locate and park staff could be helpful in locating specific lakes. #15

Specific Comments - Pacific Northwest Region Parks

Olympic National Park

1. In Olympic National Park, the elk rutting season in mid-September should be avoided. All of the lakes selected in Olympic National Park are in elk habitat and in areas used during the rut. #160

2. The Hoh River Valley in Olympic National Park is programmed for intensive sampling for long-term ecosystem effects from air and water pollutants. Therefore, any helicopter use in the valley is undesirable. #161

3. Because of the sensitive nature of the ecosystem of Olympic National Park, EPA should work very closely with the Park staff to determine conditions under which lakes in the Park can be sampled by helicopter. #162

North Cascades National Park

1. It is suspected that Diablo Lake (#4B2050) in North Cascades National Park was included by mistake since it is a low-elevation hydroelectric reservoir. #163

Specific Comments - Western Region Parks

Yosemite National Park

1. It is recommended that sampling take place after the middle of September to avoid the period of high visitor use in the wilderness. #164

2. It is also recommended that two of the unnamed lakes in Yosemite National Park be dropped from the survey. Lake 4A1-010 is shown on topographic maps as a water body; however, there is in fact no lake in this area. Park staff has confirmed this through on-site and aerial photo inspection. Lake 4A2-036 is a shallow seasonal pond that dries up in late summer and probably will not exist in the fall if sampling takes place at that time. #165

Sequoia-Kings Canyon National Parks

1. It is not evident that there has been any investigation into work already being done on the effects of acid deposition in these parks. The Parks' staff scientists have been working for two years on baseline data collection, in cooperation with the California Air Resources Board, area universities, and other Federal agencies. In addition, Southern California Edison has sponsored a water chemistry inventory of over one hundred Sierran lakes for the past several years, and the State of California is about to undertake an additional survey of lake chemistry. It may be possible that some data exist or could be gathered in connection with these on-going studies that could satisfy the needs of portions of EPA's proposed sampling effort and thus possibly reduce or even eliminate the need to sample lakes in these parks. #166

2. The list of lakes to be sampled in Sequoia-Kings Canyon National Parks includes 15 lakes that are not identified by name. The Parks' staff needs to know the names and locations of these lakes in order to evaluate the timing of potential effects of helicopter flights on pack stock or backpackers. #1

3. Due to the intensive studies underway at Emerald Lake in Sequoia National Park, sampling at this site cannot be approved. #1

Lassen Volcanic National Park

1. The PDEA does not specifically address whether sampling activities will be carried out on weekdays or weekends. Park staff prefers that sampling be done on weekdays when there is less use in the backcountry. #1

Specific Comments - Rocky Mountain Region Parks

Glacier National Park

1. Based upon an analysis by Glacier National Park's Research and Resource Management Divisions, a systematic approach to establish baseline data in Glacier's pristine lakes has been developed. This process samples 13 lakes, twice a year, with sample testing done by the University of Montana's Yellow Bay Laboratory, a leading test facility for water samples and is EPA Certified. Our analyses indicated that in order to establish any meaningful baseline data, a time series approach over a long term would be necessary. Also, based on information presented in the PDEA, our chemical analysis of water samples is much more comprehensive. #1

2. Helicopter use in Glacier National Park has been under close scrutiny the last few years, resulting in a 2,000 foot above ground level (AGL) minimum limitation being placed on aircraft flying over the Park. Most lakes identified can be reached by ground access (especially when one considers the 3-6 week sampling window). Any proposal to increase helicopter use in the Park should be carefully analyzed given the accessibility to these areas. #1

3. Page 7, Scoping Issue 1.: This issue, the landing of helicopters in wilderness areas, is a very volatile subject in Glacier National Park. Many adverse letters have been received concerning helicopter use. Landing on lakes in the Park would certainly bring more adverse reaction. #

4. Page 23, Alternative 3: In the discussion of this alternative, the PDEA notes that "for areas regarded as being particularly sensitive to intrusion (e.g., ... where high recreational use is anticipated at the time of sampling) Harrison Lakes all have backcountry campgrounds. Distrubance to Park visitors in the area of these lakes would be extreme if helicopters are used. These lakes can be hiked into in the fall. #

Rocky Mountain National Park

1. The assessment should analyse the need to sample 34 lakes in Rocky Mountain National Park. -#174

2. It is difficult to determine from Appendix A which lakes in the Park will be sampled. Appendix A should be revised to clarify this. #175

3. It is requested that close coordination be maintained with Park staff (particularly radio contact with the Park dispatcher during sampling). #176

4. It is also requested that prior to sampling, EPA contact the Park for input as to flight paths and heights. #177

5. For sampling in Rocky Mountain National Park, experienced mountain pilots must be used, and helicopters must have a ceiling capability of at least 13,000 feet. #178

6. All individuals involved in the sampling effort must be properly equipped to walk out of backcountry areas if helicopter problems are encountered. #179

Grand Teton National Park

1. Park staff have identified potential landing sites around Cirque Lake in Moran Canyon. Aerial photos are available from the Superintendent to assist in locating the landing sites. #180

Yellowstone National Park

1. The PDEA indicates that 12 lakes in Yellowstone National Park will be sampled by helicopter to obtain data on acid deposition in wilderness lakes. Because Yellowstone National Park has a high level of interest in acid deposition and other impacts on wilderness lakes, all lakes of 5 acres in size or greater have been studied in detail by the Fisheries Assistance Office (U.S. Fish and Wildlife Service (FWS)) in Yellowstone National Park. Data on fish productivity, pH, temperature, and other water chemistry variables have been collected and are available for use by EPA on many of the proposed sampling lakes. In addition, an in-depth study of acidification in the Rocky Mountain Region (Air Pollution and Acid Rain Report No. 17, October, 1983) has been prepared by J. H. Gibson of Colorado State University under contract with the FWS. One of the primary objectives of this study was to determine the sensitivity of surface waters in Yellowstone National Park to acidification by acid rain. It is recommended that EPA review the results of this study and consult with Dr. Gibson so as to benefit from his work. #181

2. Yellowstone Park staff has reviewed the proposed sampling locations and offers the specific comments listed in Enclosure II. #182

3. Approximately 2,032,721 acres of Yellowstone National Park have been recommended to Congress for designation as wilderness. Yellowstone's management of the backcountry is carried out in a designation. NPS policies (1978) specify that wilderness management policies are extended to "park areas that have been studied and recommended for wilderness designation." For these reasons, and to protect other wilderness-related values, Yellowstone National Park staff is generally opposed to the use of helicopters to sample lakes in the backcountry. If it can be shown that the only feasible means of sampling a limited number of lakes is by the use of a helicopter, consideration will be given on a case-by-case basis. #183

4. Yellowstone National Park staff is prepared to assist EPA researchers with horses, vehicles, and personnel in the sampling effort. #184

ENCLOSURE II

YELLOWSTONE NATIONAL PARK COMMENTS

PROPOSED SAMPLING LOCATIONS IN YELLOWSTONE NATIONAL PARK
SAMPLING OF WESTERN WILDERNESS AREA LAKES USING HELICOPTERS
PHASE I, NATIONAL SURFACE WATER SURVEY

Name	Location	Comments
McBride Lake	adjacent to Slough Creek	lake surveyed, pH: 8.75, total alkalinity: 68 ppm, data available on water chemistry
Nymph Lake	near highway	lake surveyed, affected by thermal activity, pH: 5.0, total alkalinity: 36 ppm, data available on water chemistry
Goose Lake	near Freight Road and Firehole River	lake surveyed, pH: 8.1, total alkalinity: 54 ppm, data available on water chemistry
Fern Lake	west of White Lake	lake surveyed, acid thermal influence, pH: 5.6, total alkalinity: 18 ppm, data available on water chemistry
	Latitude / Longitude	
4D1-6	44°38'25" 110°22'40"	west of White Lake, dystrophic bog likely
4D3-12	44°55'0" 110°42'32"	east of Nymph Lake and highway, acid geothermal area
4D3-15	44°47'54" 110°45'53"	east of Grizzly Lake, a shallow marsh likely
4D3-18	44°30'30" 110°22'45"	the middle of Yellowstone Lake, pH: 7.4, total alkalinity 0.31 ppm, abundant data available (dating back to early 1900's)
4D3-19	44°22'25" 110°27'10"	south of Delusion Lake, dystrophic bog likely
4D3-20	44°10'37" 110°17'0"	lake probably dry
4D3-73	44°49'45" 110°50'35"	Trilobite Lakes, surveyed, pH: 7.8-8.3, total alkalinity: 10-40 ppm, data available on water chemistry
4D3-75	44°13'5" 111°01'40"	lakes sampled, pH: 6.9-7.1, total alkalinity: 14-16 ppm, data available on water chemistry

LETTER #33

THE STATE OF WYOMING

ED HERSCHLER
GOVERNOR

Game and Fish Department

CHEYENNE, WYOMING 82002

W. DONALD DEXTER
DIRECTOR

March 22, 1985

EIS 2606/L3
US/EPA-Region X-Western
Lakes Acid Rain Surface
Water Survey

Environmental Protection Agency
Region 10-1200 Sixth Ave. M/S
Seattle, WA 98101

RECEIVED

Attention: Mr. Ron Lee (M/S 443)

Dear Mr. Lee:

Thank you for the opportunity to review the Draft Environmental Assessment. Most of our comments, (December 28, 1984), on the preliminary draft document were adequately covered in the Draft EA. We view the proposed EA program as essential if the acidic deposition issue in the western states is to be addressed.

We agree with the EPA proposal that use of helicopters is the most practical means for obtaining water samples from many wilderness lakes and for transporting these samples to analytical facilities in a timely manner, provided guidelines outlined in our letter of January 31, 1985 regarding helicopter flights is incorporated. Information which we have reviewed from various state and federal sources indicates that many lakes within wilderness areas of Wyoming are indeed susceptible to adverse effects from acidic deposition. Use of helicopters for collection of data to enable control of acidic deposition would, in our opinion, be consistent with enhancement of the wilderness value in accordance with the 1964 Wilderness Act.

Please contact us if we may be of further help.

Sincerely,

Francis Petera

FRANCIS PETERA
ASSISTANT DIRECTOR
OPERATIONS

FP:HBM:asc
cc: Game Div.
Fish Div.
SPC

LETTER #34

WILDERNESS OUTFITTERS

Smoke and Thelma Else

Telephone (406) 549-282
3800 Rattlesnake Driv
MISSOULA, MONTANA 5980

March 26, 1985

Wayne D. Elson
EA Project Officer, M/s 443
US Environmental Protection Agency
1200 Sixth Avenue
Seattle, WA 98101

Dear Mr. Elson:

I am sorry this reply is a little late, however, I did not realize that the EPA was going to do a National Surface Water Survey of Western Wilderness Lakes this soon. I was also unaware that the comment period was so short. It is unfortunate that you did not get your information out to more of the people whom this survey will directly affect. #185

I am strongly opposed to any use of the helicopter to obtain these water samples for this survey. I have been involved in the wilderness movement for twenty-five years and I feel I was somewhat instrumental in the Montana movement for the creation of the Wilderness Act of 1964. This act specifically forbids motorized transportation of any kind, including the landing of helicopters within wilderness.

As a commercial outfitter for twenty-five years, I know the Bob
Marshall Complex thoroughly and am well acquainted with other wildernesses
within Montana, I can strongly urge that you use conventional transporta-
tion to obtain these water samples, such as the horse or hiking. Most all
of the lakes and water areas can be visited very easily by these modes of #186
transportation. You have obviously known for some time that these water
samples were necessary and again, I feel strongly that you did not notify
the public and the people affected by this early enough so that public
response could be made. The water samples you plan to take happen to
take place in the fall and this is the outfitter's primary season for #187
hunting big game. Outfitters, of course, have their wilderness camps or
hunting areas around many of these lakes and will be disturbed greatly by
a "scientific heliocopter".

Page 2
March 26, 1985
Wayne D. Elson

In closing, I would like to state that I am strongly opposed (as I'm sure most outfitters or users of the wilderness would be if they knew of this survey) to using heliocopters as a way of getting water samples for the National Surface Water Survey. I feel you are spending way too much money for this survey that could be done very easily by the old tried and proven method of hiking or horseback. #188

Please keep me informed.

Sincerely,

Arnold "Smoke" Elser

Arnold "Smoke" Elser

AE:te

LETTER #35

STATE OF CALIFORNIA

GEORGE DEUKMEJIAN, Governor

AIR RESOURCES BOARD
1102 Q STREET
P.O. BOX 2815
SACRAMENTO, CA 95812

(916) 445-4383

March 27, 1985

Wayne D. Elson
Environmental Assessment
Project Office (M/S 443)
U. S. Environmental Protection Agency
1200 Sixth Avenue
Seattle, WA 98101

Dear Mr. Elson:

Thank you for forwarding to the Air Resources Board copies of the "Draft Environmental Assessment for the National Surface Water Survey, Western Wilderness Area Lakes" prepared by the Environmental Protection Agency. This document presents a clear picture of the need for implementing the lake sampling program to establish the sensitivity of lakes to acid deposition damage in the western United States.

This survey marks the first time the federal acid rain research program has implemented a comprehensive project of direct interest to California, so we are particulary pleased to offer our endorsement.

The evaluation of potential impacts of the four alternative sampling strategies is well done and relatively complete. However, the discussion of "Impacts to Water Bodies"of helicopter use on page 62, Section 4.1.4 needs further elaboration. It is desirable that the effects of routine helicopter emissions on both the terrestrial and aquatic systems be considered. During the on-site sampling period, helicopter engine emissions may have an adverse impact on pristine air quality in the wilderness areas and on dilute surface waters in sensitive regions. While these impacts are minimal and probably transitory, information on the level of emissions and possible mitigation measures needs to be included in this document if it is to be considered complete. #189

Again, thank you for your efforts in support of California. I would appreciate your keeping us informed on the progress of your survey in California and on the sampling approach you ultimately select. If you have any questions regarding these comments, please contact Dr. John R. Holmes, Chief, Research Division at (916) 445-0753.

Sincerely,

James D. Boyd
Executive Officer

cc: Robert M. Reed
Environmental Sciences Division
Building 1505
Oak Ridge National Laboratory
Oak Ridge, TN 37831

LETTER #36

MAR 27 1985

James Phelps
Public Lands Chair
Montana Audubon Council
2110 Bradbrook Court
Billings, Montana 59102

March 22, 1985

Wayne D. Elson
EA Project Officer, M/S 443
U. S. Environmental Protection Agency
1200 Sixth Avenue
Seattle, WA 98101

Dear Sir:

Please consider this letter as comment upon the draft Environmental Assessment, National Surface Water Survey, Western Wilderness Area Lakes, dated March 1, 1985. We note comment is due by this date, March 22, 1985. This is a very short period of time for a citizen conservation group to canvass it members on an issue, find among them those with information, and in turn make the necessary comment. With all the other issues we just simply did not have sufficient time to do so. We realize the statutes governing and/or the regulations are probably set within this time frame, but again had no real opportunity to check. It is also not uncommon to extend comment periods without everyone affected learning about such extensions. With all of this, we hope you accept the brief comment.

The proposal seems to be a common-sense approach to the problem. No one wants to damage or destroy the wilderness values and the use of heliocopters--perhaps a transitory disturbance--looks to be the best alternative. Acid rain is a question that needs addressing and knows no boundaries.

Therefore, we offer no objection.

I will propose our Council discuss the question at our next meeting so as to gain the attention of our 8 chapters.

Very truly yours,

James Phelps

copy
Mr. Robert M. Reed
Environmental Sciences Division
Building 1505
Oak Ridge National Laboratory
Oak Ridge, TN 37831

Harriet Marble, President
Montana Audubon Council
P. O. Box 649
Chester, MT 59522

LETTER #37

5201 Demaret Ave. Apt. 25
Bakersfield CA 93309
March 21, 1985

MAR 27 1985

Wayne D. Elson
E.A. Project Officer
M/S 443 USEPA
1200 6th Avenue
Seattle WA 98101

Dear Mr. Elson;

I am writing this note to inform you of my support of the Environmental Protection Agency's plan to sample western wilderness area lakes by helicoptor for potential acid rain damage.

This alternative is superior over pack animal sampling because it is much faster, cheaper, and would probably cause less "foreign" damage than a horse or mule pack expedition. An exception to the no moterized vehicles policy should be made in these wilderness and near wilderness areas in this one case. I don't believe that the effect of a momentary blast of helicopter noise could compare with the long term potential damage to an ecosystem by acid rain run-off into lakes and rivers. There is no natural buffering system of limestone and other carbonate rocks in California, so this could someday be a significant problem if the amount of carbon dioxide and other reactants released into the atmosphere continues.

I work for a petroleum engineering company as a geologist and I enjoy hiking and camping in the mountains around Bakersfield. I have then both professional and personal interests in the resolution of this issue.

Thank you for allowing me to express my support of the exclusive use of helicoptor sampling plan, and for your desire to moniter and solve a very real and serious problem.

Sincerely,

Laurie Ellen Scheer

LETTER #38

COLLEGE OF NATURAL RESOURCES
UMC 52
Utah State University
Logan, Utah 84322

MAR 27 1985

DEPARTMENT OF
RANGE SCIENCE
801-750-2471

March 22, 1985

Dr. Wayne Elson
EPA Region Six
1200 Sixth Avenue
Seattle, WA 98101

Dear Sir:

Subject: Acid rain survey in 10 western states

I have keen personal as well as professional interest in this subject, particularly in regards to the Uinta Mountain lakes in Utah. As you are probably aware, data collected by the Utah Division of Wildlife Resources in the 1950's compared with that collected in recent years shows considerable change in the pH. Even though the data collected in the 1950's is questionable as to its accuracy because of the methods used, the large, consistent differences, often in excess of 1.0 pH, strongly suggest acidification of lakes. This seems reasonable given the low buffering capacity of these lakes.

Since only a few of these lakes have 2-3 data collection dates beginning in the 1950's, I would suggest one or two of these lakes be included in your survey, if they are not included at this time. #190

Please add my name to your mailing list concerning this project. I would be especially interested in knowing which lakes, if any, in the Uinta Mountains you are planning to sample.

Sincerely,

Dennis D Austin

Dennis Austin
Wildlife Biologist

DA:js

League of Wo[illegible] California
CA 94102 (415) 98[illegible] 1332

Mary Jane Merrill, President

LETTER #39

C #39
copy mailed → Elson
Greenburg
W 1

March 11, 1985

MAR 2 8 1985

MEMO

TO: State Forest Department Rm. 1416
Resources Building
9th and O Street
Sacramento, 95814

FROM: League of Women Voters of California
926 J Street #1000
Sacramento, 95814

RE: Permission for EPA to proceed with the National Surface Water Survey of California Lakes

The League of Women Voters would urge you to grant the above permit. After attending the briefing meeting on the project, held in San Francisco last month (Feb. 11), it is our opinion that any disruption of the environment would be of a very temporary nature. At this point, when concern about acid deposition has been receiving much public attention, the data to be obtained appears to be valuable and necessary if we are to establish a viable program for protection of our mountain lakes.

Thank you for this opportunity to attend the briefing meeting and to comment on the proposal.

Mary Jane Merrill
Mary Jane Merrill , President
Jeanne Harvey
Jeanne Harvey, Water and Air Quality Director

cc: - EPA
California Parks Department

LETTER #40

STATE OF WYOMING
OFFICE OF THE GOVERNOR
CHEYENNE 82002

ED HERSCHLER
GOVERNOR

April 4, 1985

APR - 9 1985

Mr. Wayne D. Elson
EA Project Officer, M/S 443
U. S. Environmental Protection Agency
1200 Sixth Avenue
Seattle, WA 98101

Dear Mr. Elson:

Enclosed are comments from the Wyoming State Engineer's Office regarding the draft environmental assessment for the proposed National Surface Water Survey, Western Wilderness Area Lakes. When the final assessment is available, please submit 15 copies to the address below for circulation to Wyoming state agencies. Thank you.

Sincerely

Paul Cleary
Paul Cleary
Natural Resource Analyst
State Planning Coordinator's Office
Herschler Building, 2nd Floor East
Cheyenne, WY 82002

PC/tm

Enclosure

THE STATE OF WYOMING

ED HERSCHLER
GOVERNOR

State Engineer's Office

HERSCHLER BUILDING CHEYENNE, WYOMING 82002

March 6, 1985

MEMORANDUM

TO: Paul Cleary, Natural Resources Analyst
State Planning Coordinator's Office

FROM: Louis E. Allen, Water Resources Engineer LEA

SUBJECT: National Surface Water Survey, Western Wilderness Area Lakes, Draft EA; EPA, March 1985.

I have reviewed the subject draft EA, and see no problems from this office with the proposed lake survey, or with the use of helicopters to accomplish the sampling. Some of the concerns and questions expressed in my letter of January 2, 1985, to Ron Lee of the EPA on the Notice of EA for this effort have been addressed. This letter was copied to you.

We remain concerned over the possibility of additional regulations being imposed on industries when the regulations are based on conclusions drawn from a single sampling. The only conclusion I see possible from one grab sample would be the degree of acidity of a given lake. One sample could not indicate whether the degree of acidity was stable or increasing or decreasing, or what the rate of change might be. It could serve to flag lakes or areas for future monitoring, which we believe would be important. #191

It appears that sampling the deposition, whether by rain, snow, or particulate fallout, of supposedly acidifying material should be as important as the lake sampling, and would complement the lake sampling. We recognize problems in siting collecting devices in wilderness areas but, if acidification is as critical as many people claim, such data should be every bit as valuable for protection of high altitude waters as that from the lake sampling effort. Such monitoring could be accomplished without mechanized transportation with at least sufficient accuracy to identify trends and rates of change for an area. Network density could be much less than that proposed for the lake sampling. #192

Paul Cleary
March 6, 1985
Page 2

The case made in support of helicopter access in Section 3.1.3, beginning on page 33, could also be used in support of some means of deposition monitoring. As suggested therein, once an area is designated wilderness it comes under human influence due to its management requirements and the more or less concentrated influx of people and horses. A few discretely located monitoring sites should be less objectionable than the evidences of visitation in the more popular portions of the area.

As stated in my previous letter, we can support the proposed sampling effort as a means to add to the knowledge of lake acidity; as a device to impose further industrial regulations without a body of supporting evidence, we could not endorse it.

We appreciate the opportunity to review this draft, and would like to be kept informed on the project.

LEA/ht

cc: George L. Christopulos
State Engineer

STATE OF COLORADO
Richard D. Lamm, Governor
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WILDLIFE
James B. Ruch, Director
6060 Broadway
Denver, Colorado 80216 (297-1192)

LETTER #41

April 2, 1985

APR - 9 1985

Wayne D. Elson
EA Project Officer, M/S 443
U. S. Environmental Protection Agency
1200 6th Avenue
Seattle, WA 98101

Dear Mr. Elson:

Thank you for the opportunity to comment on the Draft Environmental Assessment for the National Surface Water Survey. We are sorry for the late reply, but hope that our comments can be considered nonetheless. Our comments are as follows:

- Because of the short duration of sampling at each lake, we do not anticipate any serious detrimental impact on wildlife in the area.
- We are concerned about establishing a precedent for the use of helicopters in wilderness areas, but feel that the importance of this study and the narrow "window" for data gathering justifies the use of helicopters in this instance. #195
- Our major concern is the possible disturbance of or conflict with big game hunters in the field during the sampling period. We request that sampling schedules be adjusted as much as possible to avoid open hunting areas. We have discussed this already with Les Sprenger of your Denver office and feel that most conflicts can be avoided or reduced. #196
- We suggest that the helicopters be clearly marked "EPA Acid Rain Study" or similar wording so that backcountry visitors in the area will be informed as to the purpose of the visit. #197
- We would like access to the data when it is collected and processed. We feel that this will be an important addition to our lake data bank and general understanding of high lake chemistry. #198

Please feel free to contact us if you have questions or need more information.

Sincerely,

David Weber
Wildlife Program Specialist

DW/jh

RTMENT OF NATURAL RESOURCES, David H. Getches, Executive Director • WILDLIFE COMMISSION, James C. Kennedy, Chairman
Timothy W. Schultz, Vice Chairman • Michael K. Higbee, Secretary • Richard L. Divelbiss, Member • Donald A. Fernandez, Member
Wilbur L. Redden, Member • James T. Smith, Member • Jean K. Tool, Member

---

LETTER #42

APR - 9 1985

April 8, 1985

Mr. Wayne D. Elson
EA Project Officer, M/S 443
U.S. Environmental Protection Agency
1200 Sixth Avenue
Seattle, WA 98101

RE: National Surface Water Survey
Western Wilderness Area Lakes EA

Dear Mr. Elson:

Enclosed are comments by the Environmental Defense Fund on the above-referenced EA. EDF has played a very active role in efforts to protect the Rocky Mountain west from the ravages of acid pollution damage. As part of EDF's campaign, we have participated actively in new source permit proceedings under the Clean Air Act, and are in litigation in Arizona against the two largest SO2 emitters in the West.

We also lobbied extensively last year to expand the NAPAP research program to include an assessment of effects on aquatic resources in the West. EDF was pleased and encouraged by NAPAP's decision last summer to extend the National Surface Water Survey to include western high country lakes. EDF is convinced that the pristine wilderness lakes in the West are extremely vulnerable to acid pollution damage, and that preventative measures must be taken now to ensure protection of this invaluable resource. Enclosed is a copy of EDF's strategy for protecting high country, "Safeguarding Acid-Sensitive Waters in the Intermountain West." These decisions will be made primarily within the context of permitting new sources of acid pollution under the Clean Air Act. But good decisions will not be made if good data describing current lake chemistry are not available.

On the whole, data are available for only a small fraction of the wilderness lakes at risk from acidification in Colorado, Utah, Wyoming, Montana and Idaho. And of these, only about 16 have more than a single summer grab sample. Recent evidence collected by a university research team at lakes adjacent toe Snowmass Wilderness in Colorado shows that short-term acidification is already occurring during snow melt. A more thorough and broader-based investigation of high country lakes, especially headwater lakes, is desperately needed.

The NSWS will help fill this large gap in our knowledge of pollution effects in the West. The data to be collected this year as part of the region-wide survey of more than 700 lakes is a necessary part of designing an adequate long-term sampling program that will reflect the effects of pollution over time. This year's survey is a first step that provides a basis for selecting sensitive watersheds that will be studied in phases 2 and 3 of the NSWS. Without a broad-based data set from which to target lakes for more detailed study, the money spent on phases 2 and 3 might be misdirected.

As we note in our comments, the U.S. Forest Service has a statutory mandate to protect forest wilderness lakes from the effects of increased air pollution. But the Forest Service to date has not collected adequate data to carry out that mandate.

EDF therefore calls on EPA to carry out the NSWS in the West. but we also ask that you make every effort to minimize unnecessary intrusions into the wildeness by helicopter. We urge you to evaluate carefully, in conjunction with the Forest Service, where timely sample recovery can be accomplished without helicopter use. But where justified, we urge the Forest Service to allow helicopter access to lakes that are not readily accessible by ground transport within the time required for sample recovery and analysis. Since the lakes most in need of sampling are the headwater lakes, EDF expects that helicopter access will be needed in some wilderness areas. #199

Access in this case is fully justified because of the mandate to protect wilderness area values, including lakes, from acid rain under the Clean Air Act. Access for this purpose should not be confused with access for purposes unrelated to performing the Forest Service's statutory mandate to protect the wilderness from increased pollution. No other data-gathering proposal received by the Forest Service is designed to contribute to fulfilling the Forest Service mandate under the Air Act. Nor are any likely to be.

Thank you for your decision to expand the NSWS to include western high country lakes.

Sincerely,

Robert E. Yuhnke
Robert E. Yuhnke

cc: Max Peterson, Chief, USFS
John B. Crowell, Assistant Secretary, USDA
Lee Thomas, Administrator
John Welles, Regional Administrator

BEFORE THE U.S.

ENVIRONMENTAL PROTECTION AGENCY

COMMENTS ON DRAFT ENVIRONMENTAL

ASSESSMENT FOR THE WESTERN WILDERNESS

AREA LAKES PORTION OF THE NATIONAL

SURFACE WATER SURVEY

Submitted on behalf of
the Environmental Defense Fund

April 8, 1985

Prepared by

Robert Yuhnke
Regional Counsel

Benjamin Grant
Legal Intern

I. INTRODUCTION

The following comments are filed on behalf of the Environmental Defense Fund (EDF). EDF is a charitable, non-profit, public membership organization composed of scientists, lawyers, economists, educators and other concerned citizens dedicated to the protection and enhancement of human health and the environment through research and education and through judicial, legislative, and administrative action. Organized under the laws of the State of New York, EDF maintains regional offices in Boulder, Colorado; Washington, D.C.; New York City; Richmond, Virginia; and Berkeley, California. EDF has 47,000 active members nationwide.

II. SUMMARY

EDF's comments on the Environmental Assessment (EA) prepared by EPA for the completion of the National Surface Water Survey (NSWS) in the western wilderness area lakes focus on 1) the alternatives proposed by EPA for completing that study, 2) the duty of the Forest Service (FS) pursuant to the Wilderness Act (WA) and the Clean Air Act (CAA) to collect data about all the lakes in the Wilderness System, including those most sensitive to acid deposition, 3) the obligation of the FS to allow EPA to use helicopters in a limited manner to reach lakes within wilderness areas, unaccessable by other means, based on their WA/CAA duty, and 4) the need to narrowly define this use of helicopters to insure it will not be used as a precedent for future motorized access into wilderness areas.

Underlying all of our comments is the knowledge that the high mountain lakes above 10,000 feet are the most sensitive to acid deposition. Headwater lakes are particularly sensitive because of the absence of characteristics that contribute most to the ability to neutralize acid - soils, and forest cover. In Colorado, Wyoming, and Montana, high elevation headwater lakes are almost all located in wilderness areas, many of which are Class I areas under the CAA. Consequently, these lakes are the most important ones to be studied.

Any alternative which excludes these wilderness lakes must be rejected. With this proposition in mind, EPA has an obligation to minimize the environmental effects involved with the NSWS. If it is possible to gather accurate data using a combination of horses and helicopters, EPA should choose this course over using #200
helicopters exclusively. If some use of helicopters is required to achieve access to headwater lakes or other high lakes located deep within the boundaries of a wilderness, the FS has an obligation to allow such a limited use pursuant to its duty under the WA and CAA to protect wilderness areas for future operations. Any use of helicopters, however, must be justified based on a review which provides an adequate basis for concluding that the purposes of the NSWS cannot be achieved by less intrusive means of access.

III. EPA'S FOUR ALTERNATIVES FOR COMPLETING THE NATIONAL SURFACE WATER SURVEY IN WESTERN WILDERNESS AREA LAKES

EPA has proposed four alternative plans for completing the NSWS in the west. Under Alternative 1, helicopters will be used to reach all lakes selected for the survey. The helicopters will land, take several measurements along with a water sample, fly to another lake to repeat the process, and then return to a field base lab where the water samples will be analyzed. Alternative 2 replaces helicopters with horses carrying survey teams. The survey teams will collect the water samples using a rubber raft, take some initial measurements, prepare the samples for transport, and return them to the lab for further analysis. Alternative 3 combines the first two alternatives, using horses to reach those lakes from which samples can be transported within 8 hours to the field base lab, and helicopters to sample all others. Under this plan, all chemical measurements and analytical procedures used, including those performed on samples gathered by teams on horseback, will be identical to those used in Alternative 1. Finally, under Alternative 4, the "no action" alternative, no data will be collected from wilderness area lakes.

A. Alternative 4 Is Not An Acceptable Option.

EDF contends that Alternative 4 is not acceptable because of the critical need to characterize the chemistry of western lakes. To date, limited research efforts in the Flat Tops, Mount Zirkle, Jim Bridger and Weminuche wilderness areas show that high mountain lakes have low alkalinities, and the high altitude watersheds often have little, if any, of the features that can provide acid neutralizing capacity such as developed soils and the biomass of a mature forest. In the Jim Bridger, for example, some lakes have alkalinities as low as 20 ueq/l, and many are below 50 ueq/l. In other words, many of the wilderness area lakes selected for study are among the most sensitive lakes on the planet, and could be acidified with 10 times less acid input then some lakes that have already been acidified in the northeast. Consequently, these lakes are the most important ones to study. If the wilderness is to be protected for future generations as mandated by both the WA and the CAA, it is essential that data be gathered about the most fragile parts of the system. Without such baseline data, it is virtually impossible to apply the protections guaranteed by the CAA because the Act requires a demonstration by the FLM that an adverse impact will be caused by emissions from a new source. 42 U.S.C. 7475 (d)(2)(B)(iii). But such demonstration cannot be made without data, unless EPA adopts the NEPA rule requiring "worst case" assumptions to be used when data are not available. So far EPA has not required the states to use such an assumption. Absent such a requirement, the Act imposes an "affirmative responsibility" on the FLM which cannot be met without data. Therefore the no action alterntive is unacceptable unless the FS implements an equally comprehensive program of data collection on its own.

B. The Alternative Selected Must Provide Reliable And Accurate Data

In its EA, the EPA contends, and EDF agrees, that regardless of the method chosen, the data gathered must be accurate. The EA assesses the various alternatives in terms of the quality of the data produced and concludes that Alternative 1 (helicopters only) ill yield the most accurate and complete data. The EA also oncludes that Alternative 2 (horses only) will produce nreliable data because of 1) the possibility of sample ontamination during filtration and processing at the site, 2) he increased number of sampling crews, 3) the variable transport ime to the field base lab, 4) the incompatibility of the data ith data collected in the midwest and east, because of different rotocols, and 5) the reduced number of lakes that could be ampled because of physicl logistics, certain NSWS criteria, and limited amount of time in which to collect the data (3 - 6 eeks).

While many of these assertions remain unsuppported by vidence in the EA, EDF believes that the reduced number of lakes urveyed using horses only, is enough to cast serious doubt on his approach. As previously explained, the most important lakes o study are those located at the highest elevations, and onsequently, have the longest travel times or are the most ifficult to reach by horse. Under Alternative 2, these lakes ould undoubtably be the first to be dropped from the study. The mportance of including these lakes in the NSWS is based on more han their sensitivity to acid deposition. As the EA points out, f a study based on a small portion of the total number of lakes s to be valid as to the whole, the sample portion must be elected randomly, including lakes from all areas. If those lakes hich are difficult to reach are dropped from the selection pool, he selection will no longer be random, and the validity of the urvey will be seriously undermined. Thus, not only are the number of lakes sampled important to the quality of the study, but the types of lakes studied are important as well. For these reasons, EDF recommends that in completing the NSWS, the EPA should not rely on horses for access to lakes where data quality requirements would be seriously compromised. But the data quality requirements need to be adequately documented. We suspect, however, that there will be lakes in larger wilderness areas where timely sample recovery will not be feasible without helicopter access. #201

As for Alternatives 1 and 3, the choice is less clear. Under Alternative 3, many of the most significant problems associated with the use of horses exclusively, will be eliminated. Because horses will only be used to reach those lakes from which a sample can be returned within eight hours, exceeding the 12 hour holding time established for the NSWS will not occur. Incomparability with midwestern and eastern NSWS data as a result of different protocols will not be a problem because the samples will merely be collected and transported to a field base lab. The lack of on site filtration and processing of the samples will also greatly reduce the risk of contamination. On site measurements of temperature, pH, conductivity, and transparency of the water will be collected in the same manner by both helicopter and horse survey teams.

The EA states that despite this objectives of the alternative to maintain NSWS protocols as closely as possible, there will be greater undertainties and possibilities for error than for Alternative 1. These would result from increased number of samples, greater chance of contamination during sampling from ubber rafts, less control of sample conditions during transport exposure of samples to dust and constant motion), and greater hance of not sampling the necessary number of lakes due to dverse weather conditions. Nowhere in the EA, however, are the ffects of these factors on the reliability, accuracy, or omparability of the data, fully explained or supported by actual data. At a minimum, EPA should make an assessment of the number of lakes that can be sampled by horseback within the guidelines of the NSWS to see if Alternative 3 is feasible. Without such an ssessment, no conclusion can be drawn about the completeness of he data under this alternative. Assuming most lakes could be ampled, EDF is still not persuaded by the EA that Alternative 3 ill produce unreliable or inaccurate data. #202

C. The EPA Has An Obligation To Minimize Environmental Effects.

Not withstanding the well- justified objective of obtaining the best data possible, EPA has the obligation to minimize the environmental effects caused by gathering the information inside wilderness areas. EDF strongly believes that EPA's overall objective should be to gather the most reliable data it can, causing the least environmental impact possible. Even though the impact of Alternative 1 (helicopters only) may be limited, the impact of Alternative 3 (helicopters and horses) appears to be less. If Alternative 3 can acheive the same data gathering objectives, EPA has the obligation to use it. Without knowing the number of lakes which must be sampled by helicopter rather than by horses, neither the impact nor the feasibility of Alternative 3 can be adequately assessed. #203

Under either alternative, EDF suspects that some helicopter use will be necessary. While EDF recognizes that allowing helicopters into the wilderness will have a temporary adverse impact on the wilderness, we believe that the crucial objective of gathering data from the mos sensitive lakes in the Wilderness System justifies their use. Furher, we contend that the Federal land manager has a duty to allow their use pursuant to the CAA
E
and the WA of helicopters are found to be the only viable means of gathering reliable data.

V. THE FOREST SERVICE HAS AN AFFIRMATIVE DUTY TO GATHER ACCURATE DATA CONCERNING THE ACIDIFICATION OF LAKES UNDER ITS JURISDICTION PURSUANT TO ITS OBLIGATION UNDER THE WILDERNESS ACT AND THE CLEAN AIR ACT TO PROTECT WILDERNESS AREAS

C

Pursuant to the Wilderness Act, the federal land manager (FLM) must administer wilderness areas so as to protect them and preserve their wilderness character for future generations. Under the Clean Air Act, the FLM has an affirmative responsibility to protect the air quality related values in such areas. Taken together, these acts create an obligation on the FS to collect data that is necessary to protect wilderness areas. If this information can be reasonably gathered only by using helicopters, then the FS's obligation requires their use. This obligation is further illustrated by the language of the Acts themselves and the legislative history accompanying them.

A. The Federal Land Manager's Duty Under the Wilderness Act

Section 2(A) of the WA directs the FLM to administer wilderness areas so as to insure their eternal protection.

> [Wilderness areas] shall be administered for the use and enjoyment of the American people in such a manner as will leave them unimpaired for future use and enjoyment as wilderness, and so as to provide for the protection of these areas, the preservation of their wilderness character, and for the gathering and dissemination of information regarding their use and enjoyment as wilderness . . .

16 U.S.C. Section 1131(a).

The plain language of the statute requires the FLM to take protective action necessary to guarantee that high elevation lakes located in wilderness areas will remain "unimpaired for future use and enjoyment as wilderness." Thus the FS has a duty to collect data so that informed decisions can be made regarding actions that would affect wilderness areas. If such data can be collected only by allowing EPA brief access into wilderness areas with helicopters, then the FS's duty requires such permission be granted. This obligation is made even clearer by the CAA.

B. The Federal LAnd Manager's Affirmative Duty Pursuant To The CAA.

Section 165(d)(2)(B) of the CAA charges the federal land manager with an affirmative duty:

> The Federal Land Manager and Federal official charged with direct responsibility for management of such lands shall have an affirmative responsibility to protect the air quality related values (including visibility) of such lands within a Class I area.

42 U.S.C. section 7475(d)(2)(B).

The statute is clear on its face that the Class I AQRVs must be protected by the federal land manager. The Act's legislative history further supports this intention. The Senate report accompanying the CAA provides in part:

> The Federal land manager holds a powerful tool. He is required to protect federal lands from deterioration of an established value, even when Class I numbers are not exceeded . . .
>
> While the general scope of the Federal Government's activities in preventing significant deterioration has been carefully limited, the federal land manager should assume an aggressive role in protecting the air quality values of land areas under his jurisdiction . .

S.Rep.No. 127, 95th Cong., 1st Sess., 36.

This explicit mandate given the federal land manager to protect an area's AQRVs, read together with the WA, can only be satisfied if the FLM has adequate data. Because Congress mandated that these AQRVs be aggressively protected by the federal land manager, it is a necessary implication that Congress also imposed on the FLM an affirmative responsibility to obtain adequate information with which to protect the wilderness. Without such information, the FLM cannot protect wilderness areas in a CAA proceeding. Since the FS does not have a plan of its own designed to gather this data from a representative, statistically valid sample of wilderness area lakes, its CAA/WA based duty requires it to allow the EPA to use helicopters to reach lakes that are otherwise unaccessable within the guidelines of the NSWS.

As an example of a recent case illustrating the need for the type of data the EPA study would supply, EDF cites the Exxo and Chevron permit proceedings, conducted in Wyoming in 1984. In both case the FS found itself compelled to recommend the permits be issued because of the lack of data to support objections to the projects. But in making its recommendations, the FS expressed serious reservations about the adequacy of available

data. Namely, the FS was of the opinion that:

> [1] There is relatively little information available to identify sensitive receptors for air quality related values in alpine and subalpine ecosystems.
>
> * * *
>
> [2] There is relatively little information available for determining baseline physical, chemical, and/or biological conditions of sensitive receptors.
>
> * * *
>
> [3] There is relatively little information available for identifying threshold levels for air pollutant impacts on identified sensitive receptors.

Letter from James F. Torrence, FS, to Randolph Wood, Wyoming DEQ. This information, which was lacking in these permit proceedings, is precisely the type the FS has an affirmative responsibility to collect but failed to obtain prior to making decisions regarding impacts of the Chevron and Exxon projects on the Wind River range. But this also is the type of information the NSWS is designed to provide.

Furthermore, although Wyoming DEQ and the FS relied on data prepared by Chevron based on four lakes considered to be representative of the most sensitive lakes in the wilderness area, the FS determined later in the proceedings that these lakes were not the most sensitive. In short, decisions to allow Exxon and Chevron to initiate new facilities were made without knowing what consequences these actions would have on large wilderness areas. EPA is proposing to gather some of the information the FS should have before these permit decisions are made.

C. Legislative History Demonstrates Congressional Intent That the FLM Err On the Side of Protection.

When doubt arises, whether an AQRV will be adversely impacted, Congress has directed the FLM not to subject a Class I land's AQRVs to such a risk. Senate Report No. 127 accompanying the Act states that, "In case of doubt, the land manager should err on the side of protecting the air quality related values for future generations." S.Rep.No. 127, 95th Cong., 1st Sess., 36. This policy directive demonstrates the high level of protection intended for Class I AQRVs. While it undoubtably applies to the FLM when he is determining whether to allow increased pollution in a Class I area, it also applies to this situation where the FLM must balance the present impact of helicopter access against the future impact of further acid deposition. If the FLM is to comply with this congressional policy to err on the side of protection, it must allow the temporary, limited impact of helicopter intrusion into the wilderness, in order to gather data that will serve to protect the AQRVs for future generations.

D. Not Only Does the Forest Service Have A Duty to Allow EPA to Use Helicopters Where Required, But This Use is Consistent with FS Regulations

Under Sect. 4(c) of the Wilderness Act, FS policy (USDA, undated) states that aircraft (Sect.2320.3)

> may be authorized for use by other Federal agencies, officers, employees, agencies or agents of State and county governments when necessary to meet minimum requirements for protection and administration of the area to meet the purposes of the act. The use of equipment, structures, or activities listed above may be approved also: (1) [When] either an administrative or a cooperative activity essential to the management of the wilderness cannot reasonably be accomplished with primitive methods or by nonmechanical means. In determination of what is reasonable, there must be a

> showing that the need is based upon more than efficiency, convenience, and economy . . .

FS regulations go on to state that motorized equipment nd/or mechanical transportation in wilderness areas can be ermitted only if the situation meets at least one of the ollowing conditions (Sect.2326.11):

> a. It is obvious that the situation involves an inescapable urgency and temporary need for speed beyond that available by primitive means . . [e.g., fire suppression, health and safety, law enforcement]
>
> b. A delivery or application problem exists which cannot reasonably be met with the use of primitive methods . . [e.g., delivery of supplies or material to construct or maintain improvements necessary for management of the area for the purposes of the act . . .]
>
> c. An activity essential for administering the wilderness is confined by limitations of time, season, primitive manual skills, or other restriction which makes the job impossible by primitive means . . .[e.g., maintenance of trails and other improvements, construction of trails and other improvements, geodetic control]
>
> d. A necessary and continuing program was established before the unit was incorporated into the National Wilderness Preservation System on the basis of using motorized equipment, and its continued use is essential to continuation of the program.

The limited use of helicopters to reach high elevation, sensitive lakes in order to gather data, helping to prevent their destruction, is certainly an "activity essential to the management of the wilderness [which] cannot reasonably be accomplished with primative methods or by nonmechanical means." Further, this use is consistant with both Section 2326.11(a) and (b); without some helicopter use, because of the need for speed, and limitations of time and season, many of the most sensitive lakes will go unstudied. Because the limited use of helicopters to carry out an activity essential to the protection

of the wilderness system is consistent with FS regulations and policy, EDF urges that such permission be granted.

IV. THIS EXCPTION TO THE GENERAL PROHIBITION OF MOTORIZED ACCESS TO WILDERNESS AREAS MUST BE CAREFULLY LIMITED TO ONLY THOSE SITUATIONS WHERE SCIENTIFIC MONITORING IS NEEDED TO PROTECT THE ENTIRE WILDERNESS PRESERVATION SYSTEM FROM A LONG TERM SYSTEM-WIDE THREAT

EDF shares the concern of the FS, EPA, and other environmental organizations that this one time request for motorized access will serve as a precedent for granting other requests. In order to insure that this undesirable result does not occur, the FS must narrowly tailor this exception. EDF believes that the proper standard for such requests for motorized intrusion into wilderness areas should be limited to those cases #204 where the purpose of the scientific study is to protect the entire Wilderness Preservation System from a long term, system-wide threat. EDF emphasizes the words "protect" and "entire Wilderness Preservation System," because these criteria will severly limit any further intrusions. It is highly unlikely that a study for the purpose of protection, of this magnitude will occur again. If it does, it may be that the intrusion is justified. In any event, this standard will almost exclusively limit helicopter use to this NSWS study.

V. CONCLUSIONS

For the reasons set out above, EDF recommends the following action:

1. EDF document the need to analyze samples within the short holding times stated in the EA. #205

2. EPA assess the number of lakes selected for the NSWS hich can be reached by horses within the guidelines of the NSWS #206 o determine the extent to which Alternative 3 is feasible.

3. If EPA contends that ground access is not feasible given he need for rapid analysis of data, the lakes which cannot be #207 eached by horse or foot transport should be identified.

4. If Alternative 3 is feasible, EPA should work with the S and NPS to minimize the number of helicopter flights #208 ecessary.

5. The FS should approve the limited use of helicopters to each wilderness area lakes that cannot reasonably be reached by #209 ther means.

Robert E. Yuhnke

Robert E. Yuhnke
Regional Counsel

F.3. RESPONSE TO COMMENTS

State of Washington Department of Game (Letter #1)

1. Fall has been determined to be the best season to sample lakes to meet the objectives of the NSWS because the lakes will become well mixed during fall overturn and will have a relatively uniform chemistry. While Rocky Mountain weather can be extreme at any time of the year, the spring time involves more dangerous winds and storms of longer duration than does the fall. In a conversation with Mr. Don Griffiths (U.S. Department of the Interior, Office of Air Services, Boise, Idaho) on February 7, 1985, Carl Petrich (ORNL) was told that fall helicopter flying would be better for project purposes and operations than spring helicopter flights in the Rocky Mountains. Also, the discussion on p. 8 of the EA (last paragraph) addresses the comment.

2. Because of the large number of lakes that will be sampled in the western portion of the NSWS, it has not been possible to develop data on the number of sportsman that use specific wilderness areas. Specific consideration of conflicts with sportsman would be considered during planning between base coordinators and local land managers beginning after a decision is made on access until sampling begins (Appendix E.6).

Bridgerland Audubon Society (Letter #2)

Comment acknowledged.

Bureau of Indian Affairs; Wind River Indian Agency (Letter #3)

3. The Tribal government has been contacted by the Base Coordinator in EPA Region 8. Concerns about specific lakes will be addressed during planning activities between Base Coordinators and local land managers beginning after the decision on access and continuing up to the time of sampling (Appendix E).

Bureau of Indian Affairs, Phoenix Area Office (Letter #4)

Comment acknowledged.

Idaho Department of Fish and Game (Letter #5)

4. The discussion of mitigation measures at the top of p. 68 of the EA indicates that scheduling of sampling will attempt to minimize conflicts with recreationists.

State of Utah Natural Resources (Letter #6)

5. Two comments (5, 6) suggested studies (of air quality, snowpack quality, and acidic deposition) that, while certainly relevant to the acidification problem, are outside the scope of the NSWS, Phase I. Such studies are, in fact, being conducted as part of the National Acid Precipitation Assessment Program.

This comment also deals with the appropriateness of the selected water-quality parameters, stating that buffering capacity was not being adequately addressed. This is to be addressed in the NSWS by measurement of alkalinity (the capacity to absorb input of strong acid without change in pH beyond a stated limit); of course, as with other variables in Phase I of the NSWS, this measurement of alkalinity is based on a single measurement in time and space for each of the sampled lakes - more detailed studies are to be conducted in Phases II and III of the NSWS.

6. Two comments (6,9) pointed out the importance of the pulse of snowmelt runoff to lake chemistry. This is true, but it would be difficult to measure as part of Phase I (as noted on pp. 8-9 of the EA). The input of snowmelt runoff is being studied elsewhere in the National Acid Precipitation Assessment Program and is appropriate for study in Phases II and III of the NSWS. Also, see response to Comment 5.

7. EPA concurs with this concern and will incorporate the suggestion to alert pilots to the possibility of disturbance to or collision with whooping cranes as part of the training program for the survey and helicopter crews described on p. 64 of the EA.

8. EPA concurs with this concern as discussed on p. 68 of the EA. Specific suggestions will be included in the training program for survey and helicopter crews described on p. 64 of the EA.

9. See response to Comment #6.

National Audubon Society (Letter #7)

10. EPA recognizes that the program could serve as a precedent for using helicopters for planned research in wilderness areas (EA pp. 29, 51, and 71), but believes that few, if any, future such research programs will be able to advance equivalent justification for helicopter access. The survey is unique in that is is designed to develop data for the entire nation on a problem of national concern; few future studies are likely to involve the widespread geographic scope of possible effects and sources, the lack of available data, unique monitoring and quality control procedures, and the high policy and legislative priority. In some wilderness areas, the use of helicopters has been permitted in the past, and the issue of precedent is moot; in areas where helicopters or other aircraft have not been used, the potential for concern about precedent is real. If the FS allows helicopter use (i.e., adopts Alternatives 1 or 3), their decision will clearly document the criteria used to limit any interpretation of "precedence". As stated on p. 36 of the EA, EPA recognizes (as does the FS Manual) that a reasonable need for using aircraft in wilderness areas cannot be based merely on "efficiency, convenience, and economy."

11. EPA has broadened Alternatives 2 and 3 to include the possibility of accessing lakes by foot. The implications of these alternatives on data quality are discussed in the supplemental analyses provided with the Final EA. EPA is reviewing submitted proposals.

12. The discussion on pp. 50-51 of the EA addresses the suitability of using helicopters in wilderness areas. Problems with using non-motorized access are discussed in Sect. 4.2.8 of the EA.

13. Sampling during the fall will avoid breeding periods of the bald eagle, peregrine falcon, and migratory waterfowl. As described on p. 61 and pp. 64-68 of the EA, EPA Base Coordinators will work closely with local land managers to schedule sampling to minimize impacts to wildlife and recreational users.

14. Two comments (14, 44) dealt with the potential for adverse ecological effects from spills of fuel or reagents. As noted in Comment #44, some toxic effects could occur other than those discussed on p. 62 of the EA; however, the volatility of the fuel should minimize the period of exposure for aquatic biota. Part of the training of survey and helicopter crews (p. 64 of the EA) deals with practices to avoid the possibility of spills of reagents and fuels; also, proper maintenance of helicopters should reduce the likelihood of fuel spills.

State of Idaho, Department of Health and Welfare (Letter #8)

Comment acknowledged.

Wm. A. "Bill" Worf (Letter #9)

15. The EA (pp. 35-37) and the revised Summary and Conclusions address these concerns.

16. The comment does not correctly quote from the Wilderness Act. The Act does not set forth "THE minimum requirements" (emphasis added). It states "minimum requirements," thus suggesting that such requirements are dependent on each situation and context, and not some body of set, inflexible minimum requirements. The revised Summary and Conclusions discusses "minimum requirements" in relation to this action.

17. Staff expertise is appropriate for the issues addressed.

18. The Summary and Conclusions have been revised to clarify the discussion of the purpose of establishing the Wilderness System. The EA clearly states (p. 53) "While the most obvious wilderness use is recreational,, it is not the primary reason the National Wilderness Preservation System was established. The objective of the Wilderness Act is to preserve an enduring wilderness resource characterized by naturalness and outstanding opportunities for solitude; primitive recreation is provided for, with these goals as overriding constraints . . .".

    The EA also describes in detail the goals and values of the wilderness preservation (pp. 32-37). The EA (Sect. 1.3, p. 4) includes a description of wilderness (from the Act), which certainly demonstrates that EPA understands what is meant by wilderness and why it is in need of protection. Simply setting aside land and calling it "wilderness" does not keep it so. Formal designation alone is insufficient protection for these lands. They must be actively managed. Yet, this is the dilemma the FS and other wilderness managers find themselves caught in: the more you manage wilderness to protect it, the less by definition it remains true wilderness. This problem was discussed in the quotation from Roderick Nash (pp. 33-34) from a FS publication, and is indeed the source of many of the issues addressed by this EA.

19. The first paragraph on p. 33 of the EA notes that wilderness lands are set aside by law in wilderness areas specifically because they are wilderness and are not subject to the same uses and management as are national parks, forests, and wildlife refuges. This discussion also identifies the problems with an approach to wilderness that puts too much emphasis on resource management.

Wilderness as resource was not listed as a wilderness value because the FS itself does not list it that way in its own publications (cf. p. 32 of the EA). EPA (p. 49) follows the same three values as identified on p. 32 and examines projected impacts on these values. Wilderness as resource is not identified as such on p. 32, nor are impacts of alternative actions on wilderness as a resource assessed as a value in subsequent sections. Recreation is not assessed anywhere in the EA as a value, only as a use, as the document's structure and text clearly show. The first paragraph on p. 49 states that "the foremost value in wilderness management is taking those actions that preserve wilderness character, that maintain the integrity of the wilderness" (empahsis added). This probably comes closest to what the commentor means when wilderness as resource is identified. Environmental impacts on recreation of Alternative 1 are discussed on pp. 53-61, while the environmental impacts on wilderness values are discussed on pp. 49-53. Recreational impacts were identified in the scoping process as an area of significant public concern, and, therefore, received considerable attention in the EA.

20. The EA, as stated above, concerns itself with the three primary wilderness values identified by the FS. The aspect of "cultural museum" is an attribute of wilderness mentioned neither directly nor indirectly in the Wilderness Act.

21. EPA concurs with the comment and believes that it has adequately demonstrated the idea that wilderness should not merely be used as wilderness (as the comment states), but also be valued as wilderness (pp. 32-37 of the EA).

22. EPA has developed additional information on the accessibility of lakes by horse (see Appendix E.4). Approximately 40% of the lakes would not be accessible by ground access within the time constraints defined under Alternative 3. EPA has a list of randomly selected alternate lakes available. However, a significant bias would be introduced if these lakes were used to selectively replace lakes.

23. In discussions with local FS staff responsible for the Bridger Wilderness, and in maps and other information supplied by them (see Table 4.2-1 and accompanying notes on p. 84), it was made clear that (1) there were lakes the survey crews need to sample that are farther than a 7 h horseback ride, and (2) that there are lakes to be sampled that have no horse or other trails leading to them. No contact was made with FS staff in the High Uintas for the analysis prepared in the EA.

EPA Base Coordinators have developed additional information on the accessibility of lakes to be sampled in western wilderness areas since the draft EA was prepared (Appendix E.4). This analysis shows that as many as 40% of the lakes are too inaccesible for samples to be transported out by horse within the 7 h time constraint of Alternative 3.

24. The cost of Alternative 2 is composed of two parts. Part 1 is the estimated cost of the original survey, which is $3.8 million. Part 2 is the added cost of Alternative 2, which is $3.2 million. These costs are additive because helicopters will probably still be required to take the samples to be analyzed. In addition, a study would be required to compare 25 lakes sampled by the two protocols.

25. EPA staff discussed feasibility of using pack animals with FS rangers in five wilderness areas (see Table 4.2-1 and accompanying notes on p. 84). These people were completely familiar with local packers' stock, procedures, availability, and experience. It was beyond the scope of the EA to contact individual packers.

26. EPA did not introduce the issue of precedence; it was identified during the public scoping process (p. 7 of the EA). An evaluation of the extent to which Alternatives 1 and 3 might contribute to the setting of a precedent naturally would involve examining and documenting previous helicopter use in wilderness areas. The issue of precedence is addressed on pp. 29, 51, and 71 of the EA. The EA does contain a statement (p. 71) to the effect that a reasonable argument could be made that Alternative 1 is consistent with FS criteria, and, therefore, "neither establishes or contributes to any sense of precedence." The proposed study (of which the survey is a critical component) is developing data for a congressionally mandated assessment and is not merely national in scope. EPA makes no claims that the purposes of this study are more important than wilderness values. EPA believes that wilderness values are most directly protected by implementation of Alternative 1. That results of the study may lead to measures that also protect lands outside of wilderness should not diminish the relevance of study results for protection and preservation of wilderness values. Also, see response to Comment #10.

27. EPA does not intend to use helicopters or install equipment in wilderness area streams in the West. Few, if any, streams in the West will be included in the survey.

28. EPA has already initiated a public involvement process during scoping of the EA (Sect. 1.4). The Agency intends to continue this process and feels that informing the public of its activities, both inside and outside wilderness areas, is an effective way to mitigate impacts on wilderness users.

29. Training crews in appropriate wilderness values for whichever alternative is chosen would be part of the EPA-FS coordination activity (Sects. 4.1.6, 4.2.6, and Appendix E.6).

30. The Summary and Conclusions have been revised to address this concern.

31. As discussed on pp. 78-80 of the EA, the risk of not obtaining data of sufficiently high quality is least with Alternative 1, which uses an approach that has been proven in the eastern and midwestern portions of the NSWS. The use of a new approach to sampling in western wilderness areas presents a higher, but unquantifiable, risk to obtaining data of adequate quality. See supplemental analysis provided with this Final EA.

American Wilderness Alliance (Letter #10)

32. Alternatives that include non-mechanized means (Alternatives 2 and 3) are evaluated in the EA.

33. Previous use of helicopters in wilderness areas is discussed on pp. 49-50 of the EA.

34. See response to Comment #26

35. Section 3.1 of the EA addresses these concerns.

36. These concerns are addressed on pp. 57-61 and 68 of the EA.

37. See response to Comment #22 and #23.

38. Use of outfitters and guides falls within the concept of Alternative 2 as described in the EA; Alternatives 2 and 3 have been broadened to include backpacking as a mode of access.

The National Outdoor Leadership School (Letter #11)

39. EPA has modified Alternatives 2 and 3 to include the use of backpackers so that as many lakes as possible could be sampled by ground access. EPA is reviewing the NOLS proposal.

Wyoming Recreation Commission (Letter #12)

Comment acknowledged.

Environmental Testing and Balancing, Inc. (Letter #13)

40. The issue of precedence is more fully discussed on pp. 29, 51, and 71 of the EA. See responses to Comments #10 and #27.

41. Statistically, the statement by EPA that "... we cannot delete lakes from that list ..." is different from failure to sample a few lakes for a variety of unforseen reasons. Any intentional or systematic deletion of selected lakes may have serious statistical consequences, but accidental, essentially random deletions will not, as long as the sample size remains large enough to obtain reasonable error bounds to the estimates. Thus, the perceived contradicition is not real.

42. Helicopters will not be flown in the manner in which they are used for disbanding game herds. Proper flight approaches when landing in the center of a lake will minimize, if not eliminate, disturbance of game. As stated in the EA, all flights will be coordinated with local land managers to ensure that all such mitigation practices are followed as needed for particular lakes.

43. The EA (p. 61) specifically mentions Canada geese as of note for animals potentially disturbed by helicopter noise. The possibility of bird/aircraft collision is a safety consideration that is real but extremely remote. Pilots will be experienced in western flying and hence aware of the potential hazard posed by birds. The aircraft will not be flown as if they were herding animals or doing stunts, but instead in a manner to minimize noise effects and maximize safety. These considerations are already addressed in the EA.

44. If a fuel spill were noted, the lake would either not be sampled or the data sheet would be marked to guarantee that the sample was identified as potentially contaminated. Also, see response to Comment #14.

45. The detailed noise data presented in Appendix C are for the Bell 206L (Long Ranger) helicopter, a turbine-powered machine. Sound-generated avalanches in early fall are an extremely remote possibility. Wilderness users would not be exposed to sufficiently loud helicopter noises from sufficiently close distances (hovercraft would land near centers of lakes, if that is the deepest point) for sufficiently long durations (20 min. vs a likely 8 h at 50-ft. distance) to cause ear damage. Bats would not be active at the time of helicopter flights. Bats, as other animals, would avoid hearing damage through fright responses and would, as mentioned above, not be exposed to sufficiently loud noises for sufficiently long enough times (at sufficiently close distances) to be permanently affected.

46. During review of the Draft EA, a comment was received that EPA use pigeons to sample the wilderness lakes. Under this scheme, pigeons would be carried in to the wilderness and then would be used to fly the samples out. In evaluating this alternative, EPA attended a demonstration at Rattlesnake Lake, Washington on 3/1/85. During that demonstration pigeons carried 10 ml samples back to their home base. However, the sample size required for the survey is 4 liters, which is 400 times the amount of water that the pigeons could each carry. It was not felt that a pigeon could carry this sample size. To break the sample up into small enough aliquots that the pigeons could carry was also not considered feasible.

Oregon Department of Environmental Quality (Letter #14)

47. As discussed in Sect. 4.1.6 (p. 64 of the EA), EPA Base Coordinators will work closely with local land managers to satisfy local requirements such as the variance mentioned. In addition, a major purpose of the EA is to identify such concerns so that they can be addressed by EPA, working with the State agency or other concerned party.

U.S. Fish and Wildlife Service, Helena, Montana (Letter #15)

48. As discussed on p. 64 of the EA, EPA plans to work closely with local land managers to minimize potential impacts.

North Cascades Conservation Council (Letter #16)

49. Alternative 3 considers a combination of access modes. If this alternative were chosen, detailed planning by EPA Base Coordinators, interacting with local land managers, would consider each lake to determine the appropriate mode of access (Appendix E.6 and Sect. 4.1.6).

50. This comment encourages the use of a mode of access (foot, horseback, or helicopter) found necessary for each lake; this is similar to Alternative 3. The same comment suggests that each lake, in recognition of site-specific differences in watershed and lake-chemistry characteristics, have a unique baseline analysis. This approach is more suited for later phases of the NSWS than for Phase I, which is aimed at developing a consistent set of data for all lakes.

51. The Summary and Conclusions Section has been revised to clarify the relationship of the three phases of the NSWS. No subsequent survey of large numbers of lakes similar to the Phase I survey is planned. Phase I will provide the statistical basis for extrapolating results from detailed Phase II and III studies to wilderness areas. The Phase II and III studies will involve more detailed analysis of fewer lakes, most, if not all, of which will be outside wilderness areas. Helicopter access to the Phase II and III lakes will not be needed. In the event that a Phase II or III lake is in a wilderness area, only ground access would be used.

52. It is unclear from the comment where in the EA any such statement occurs. On p. 49, EPA states, "That the visual and audible presence of a helicopter would be incompatible with visitors' expectations of the aesthetic quality of a wilderness is clear." The EA (p. 30) cites numerous instances of the projected negative impacts of helicopters on wilderness users.

53. A study conducted by EPA in September, 1984, demonstrated that the helicopters are not a source of contamination. Comparison of data for all twenty-one NSWS chemical variables showed that samples collected by helicopter did not differ significantly from samples collected from the same lake using a boat (E. Meier, EPA, Las Vegas, Nevada, personal communication to R. Cushman, ORNL, Apr. 4, 1985). Not sampling very shallow lakes (important in ensuring that the Van Dorn sampler not disturb the bottom when the water sample is taken from a depth of 1.5 m) will also prevent propwash from disturbing bottom sediments.

54. The lakes selected for sampling during Phase I of the NSWS were selected at random as discussed in Sect. 2.1.1 (pp. 10-14) of the EA.

Sierra Club (Letter #17)

55. EPA believes that the agency is correct in undertaking a NEPA review in this actaion. The Federal action in this case is EPA's proposed sampling of western wilderness area lakes. The means of access to the lakes and the sample protocols are all part of the proposal. While the FS and NPS have the authority under the Wilderness Act to decide what type of access is appropriate, EPA will make the ultimate decision on whether the proposal will be undertaken. EPA prepared this EA to determine if the proposal could have a significant impact on the environmentally sensitive wilderness areas. The FS provided substantial input throughout all phases of developing this EA. The findings in the EA will assist EPA in its decision on undertaking the proposal.

56. EPA believes that NEPA and the Wilderness Act both apply in this proposal. EPA has a responsibility under NEPA to determine the impact of its proposal on the wilderness environment. The FS and NPS are responsible under the Wilderness Act for determining the mode of access to these areas. The broad-based environmental review that has been performed under NEPA addresses the issues that are of consideration under the Wilderness Act. The findings in the EA will assist EPA in its decisionmaking process on the proposal to sample in the wilderness areas. The EA will also provide the information which the FS and the NPS need on order to make a decision on access.

57. We agree that the FS and the NPS are the federal agencies which are responsible for making the decisions on EPA access to the involved wilderness areas. Their decision will be based on the criteria in the Wilderness Act. We have revised our EA to more fully address these considerations and believe that the EA now provides sufficient information for the FS and the NPS to make a decision on this matter.

58. EPA prepared this environmental assessment to determine if its proposal would have a significant impact on the western wilderness area lakes. On a cumulative and individual basis, we have determined that the impact of the sampling would not have significant impact. Based on our experience with the Eastern portion of the NSWS, and specific information on some of the lakes, we do not anticipate any significant site-specific impacts. However, prior to sampling any of the lakes, we will coordinate with Forest Service Supervisors and Park superintendents to determine conditions at the lakes and any measures which should be taken to avoid any significant impacts on the environment.

The Wilderness Society (Letter #18)

59. The issue of precedence is not ignored; it is addressed on pp. 29, 51, and 71 of the EA. See response to Comment #10.

60. The selection of lakes was done randomly. Many of the most sensitive lakes are located within these areas. See Appendix E.2.

61. The purpose of the Phase I survey is to provide a statistically valid data base that can be used as a basis for extrapolating results from future studies, including Phase II and III, to a regional or national level. Without the Phase I data, selection of regionally representative lakes for Phases II and III would not be possible. The problem with existing data is that there is no statistical base that can be used for extrapolation, so that quantitative regional assessments cannot be made. Phases II and III will provide the detailed studies needed to evaluate trends in acidification and the resulting effects on biota and the ecosystem as a whole. EPA has no intention of making additional requests to use helicopters in wilderness areas because the detailed studies would require repeated visits and more elaborate equipment so that ground access would be most appropriate.

62. EPA has presented its reasons for preferring to use helicopters in the EA. EPA believes several reasons relating to the need to gather accurate, reliable, and usable data necessitate helicopter use. These reasons are unrelated to efficiency, convenience, and economy. Whether helicopters are safer than horseback or backpack access is unknown at this point (Table S-1). Discussions with George Schaller (see Table 4.2-1, p. 84), a FS staff member with the Custer National Forest in Montana having responsibilities for the Absaroka-Beartooth Wilderness Area, resulted in his recommendation that the helicopter sampling mode be chosen over other access modes because of safety (and other additional reasons). In this particular wilderness area, he cautioned, no access mode was particularly safe in the fall. He stated it was unusually rugged, and some of the lakes selected offered severe challenges.

63. Downtime is considered during planning to allow for weather conditions, maintenance of equipment, mechanical problems, and unforseen circumstances. The 60% figure for downtime was used during the eastern and midwestern portions of the NSWS and proved to be a good approximation. This figure should not be a disadvantage of using helicopters, but simply a realistic planning tool.

64. Alternative 3 has been broadened to include access by foot.

65. EPA disagrees with the statement that protection of wilderness lands will be "sacrificed for the primary goal of the survey." It is true that the primary goal of the survey is not to collect data on wilderness areas per se, but it is also true that the data obtained from the survey can and will be used by wilderness area managers to identify areas susceptible to, or already experiencing, acidification and assist these managers in taking steps, along with other agencies such as EPA, to limit the damage done and thereby protect the wilderness system. The problem of acidic deposition is a regional one, and a regional data base is needed to evaluate the extent of the problem and possible solutions. In addition, the regional data base will permit the results of studies done outside wilderness to be applied to specific wilderness areas and problems.

66. Figure 4.1-1 and accompanying text on pp. 50-51 lay out the relationship of the long-term threat of acidic deposition vs the short-term intrusion of helicopters. Whether intrusion by helicopters has been, is, or could become a long-term problem is a matter of FS policy. The issue of precedence is discussed on pp. 29, 51, and 71 (see response to Comment #10).

67. EPA disagrees. EPA believes that the Federal action in this case is EPA's proposal to sample western wilderness area lakes. Thus, EPA is correct in undertaking the NEPA review on this action. See response to Sierra Club comments. EPA also believes that this EA has adequately addressed all the considerations necessary to make an informed decision on this proposal including the FS and NPS decision on wilderness access. Furthermore, in this particular action, EPA has gone beyond the EA process by providing opportunity for public participation which is comparable to the environmental impact statement process, i.e., a scoping process and public review of the draft EA. Site-specific considerations will be addressed through coordination with the lane managers prior to sampling.

The National Audubon Society, Rocky Mountain Regional Office (Letter #19)

68. As noted in the comment, grizzlies are less likely to be encountered during the sampling period than at other times. The possibility of encounters will be ascertained by coordination with local officials and steps taken to minimize effects. Sampling will not involve "repeated passes at low elevations" but one-time, direct descents to lake surfaces.

69. As discussed on p. 64 of the EA and in Appendix E.6, EPA Base Coordinators will work closely with local land managers. At this stage in planning, which will begin shortly after the decision on access mode is made, detailed planning for each lake will be undertaken.

70. See response to Comment #11.

71. Accessibility for Alternative 2 is defined in terms of distance and the presence of trails to lakes in the Analysis of Feasibility discussion on pp. 80-85. Accessibility must take into account the ability to get both sampling crews and equipment to the lake.

72. This comment and #133 question the universality of the recommended NSWS protocols. The proposed methods have not necessarily been followed by the scientific community in a uniform manner; however, the goal of the NSWS is not so much to provide data comparable to previously published data (which vary widely in quality) as it is to provide an internally consistent data set of expected high quality. See response to Comment #50.

73. Alternative 3 provides for a combination of access methods that would take into account protection of wilderness values. There would be a greater risk of developing comparable data quality with this alternative (Appendix E.1).

74. Section 4.1 (pp. 64-68 of the EA) describes the suggested mitigation for these concerns.

Gary Paull (Letter #20)

75. The EA provides three reasonable alternatives for gaining access to wilderness area lakes. EPA has broadened Alternatives 2 and 3 to include ground access by foot as well as by horse. Statement of an agency's preferred alternative is normally done in a NEPA document.

76. The EA, as a NEPA document, is a full-disclosure document. EPA believes the EA presents a balanced comparison of alternatives, including the use of non-mechanical means of access and has discussed the importance and usefulness of the data that would be generated by the survey.

77. The table has been modified in response to this comment.

78. See response to Comment #75.

79. Landing a helicopter on a wilderness lake does not violate the Wilderness Act, if the FS or other appropriate land management agency permission has been obtained. EPA believes that use of helicopters is the best approach to obtaining high-quality data that could be used to develop control strategies for reducing acidic deposition. Although not within the explicit mandate of the Wilderness Act, such controls (and the processes that generated them) are in keeping with the purposes and the spirit of the Act (pp. 50-52).

80. The absence of lakes in Nevada and the desert SW is a consequence of the sampling universe used (see Fig. 2.1-2, p. 12, alkalinity and subregion boundaries) and of the random selection process. Another random sample drawn from the same universe might have a few more lakes in Nevada and New Mexico, but the number would still be few because of the absence of lakes of interest in these states.

81. The statement is true, but there are also situations where a helicopter could reach a lake after a snow storm when access by foot would be very difficult or impossible.

82. See response to Comment #53.

83. Shaking of the sample by pack horse is likely to be longer in duration. Shaking in a helicopter, however, will also occur.

84. See p. 35-36 and revised Conclusions Section of EA.

Washington Wilderness Coalition (Letter #21)

85. NEPA does not call for any alternative action to be proven beyond reasonable doubt as the only way any objective can be accomplished. NEPA calls for a full disclosure and consideration of all the environmental impacts associated with proposed actions. Some of the reasons for using helicopters that are beyond their efficiency or convenience are listed at

the bottom of p. 3 of the EA. EPA is not advancing Alternative 1, because of the efficiency, convenience, and economy of helicopter use. Instead, EPA believes that use of helicopters is the best approach to obtaining high-quality data that could be used to develop control strategies for reducing acidic deposition (see Sect. 2.5).

The use of helicopters in wilderness areas is a legitimate action under Sec. 4(c) and 4(d)(2) of the Act, associated FS Manual, and USDA regulations. See revised Summary and Conclusions.

86. EPA has broadened Alternatives 2 and 3 to include access by foot. Use of volunteers to collect samples is discussed on p.8 of the EA.

Denver Audubon Society (Letter #22)

87. Phase I is critical to Phases II and III because it will provide a statistical basis for selecting lakes to be studied in detail and over the long term and will allow the data from these studies to be extrapolated to regional and national levels.

88. The quality of data collected in the survey is critical to the survey objectives and is the primary factor driving EPA's need to use helicopters in wilderness areas. EPA believes that to get the high quality data needed for regional and national assessments, use of helicopters is necessary. Collection of data by other access modes will produce data that is of lower quality and/or a data base that cannot be used to assess acidic deposition in the West. EPA believes these data can be used by the FS in managing its wilderness system and believes the approach is the "minimum tool" needed to obtain this kind of information. The FS must decide if the long-term protection of the wilderness system is best served by allowing these data to be collected.

89. Alternative 3 provides for a combination of access methods to be used, which would, within certain time constraints, allow some of the lakes to be sampled from the ground.

90. Lakes were randomly selected, and there is no redundancy here. The reason for the large proportion of lakes in wilderness areas is that both low alkalinity lakes (i.e., potentially sensitive lakes) and wilderness areas are correlated with high altitudes in the mountains. Adding more lakes for Phase II would not be advisable, because the purpose of Phase I is to get an adequate statistical sample; having fewer lakes in Phase I would increase the confidence limits of the Phase I data base.

Sierra Club, Rocky Mountain Chapter (Letter #23)

91. The EA presents a consideration of three reasonable alternatives that are being considered for access.

Michael Lee Wilson (Letter #24)

Comment acknowledged.

Sierra Club, Oregon Chapter (Letter #25)

92. See response to Comment #104.

93. Additional consideration of alternative access modes has been made in preparation of the EA, with specific consideration given to the possibilities of using ground access. The FS and NPS will determine whether the use of helicopters can be permitted within wilderness areas under the provisions of "minimum requirements" needed for administration or in a manner "compatible with wilderness values."

94. EPA believes that the "minimum requirements" for protecting wilderness from acidic deposition is the use of helicopters for the survey, and that helicopter access is compatible with preservation of wilderness values in these circumstances. As stated on p. 49 of the EA, "To the extent that other alternatives cannot meet the timing and quality guidelines of the lake survey, Alternative 1 would be in keeping with the spirit of the Wilderness Act." EPA believes the use of helicopters, in this context, is "within the concept and philosophy of the intent of retaining an enduring resource of wilderness unimpaired for present and future use and enjoyment as wilderness" (p. 35).

95. See response to Comment #10. Nowhere in the EA does EPA consider "previous helicopter use as precedent for its proposed action." On p. 49, other precedents are cited, but not used as justification for the issue at hand.

96. Two comments (109, 122) note that immediate extraction of monomeric aluminum in the field is preferable to extraction in the field base laboratory after several hours, in that less sample degradation may occur. This is correct, although there are also potential drawbacks to extraction in the field, as discussed on pp. 76-78 of the EA. The overall quantitative effect of such a modified protocol on data quality has not been determined (see Appendix E.1).

97. See response to Comment #23. Subregion B of the NSWS, which includes Oregon, has one of the lowest percentages of lakes that have been determined to be inaccessible by ground access (Appendix E.4.)

98. A small number of lakes could be dropped from the sample as long as the lakes are not systematically deleted and as long as the sample size remains adequately large. The inclusion of randomly selected alternate lakes in the sample allows for some leeway in obtaining an adequate sample.

99. Alternatives 2 and 3 have been broadened to include the use of backpackers.

100. The question of liability would have to be evaluated carefully on a case-by-case basis if any volunteers were involved in the survey.

101. EPA agrees that it is possible that backpackers could carry the necessary equipment. The following estimates of weight of equipment have been developed assuming a four person crew: food and water (50 lbs.), camping equipment (96 lbs.), sampling equipment (121 lbs.), and a raft (65 lbs.). This would mean that if the weight were equally divided, each crew member would carry approximately 80 lb packs. Equipment such as the raft and hydrolab are bulky and would require one individual each. It is likely that more backpackers would be needed, especially for lakes that are distant (i.e., greater than five miles from the nearest trailhead).

State of Washington, Department of Ecology (Letter #26)

102. EPA has conducted an extensive review of sampling methods, which has been peer-reviewed, and believes that the methods selected are essential to obtain the high quality data needed for developing an adequate data base that can be used to relate future and past research to the regional problem of acidic deposition. Possible access methods are evaluated in the EA, and consequences to the quality of data are evaluated in the EA and the supplemental materials included with this Final EA.

103. Alternatives 2 and 3 have been broadened to include the access by foot. If this alternative is chosen, the suggestion made will be considered in detailed planning for sampling conducted between the EPA Base Coordinators and the local land managers. See Appendix E.6.

104. Alternatives 2 and 3 have been broadened to include foot access. EPA concurs that the situation described might occur.

105. The cost of each alternative ranges from $4200 per lake to $7800 per lake. For example, the costs of Alternative 3 are about $4200 per lake. This figure can be calculated by dividing the cost of the survey for Alternative 3 ($3.8 million) by the number of lakes (about 900). There are several things that contribute to this cost.

Sample analysis costs are about $750 per lake. This is because a more extensive analysis is done than that performed by the Department of Ecology. In addition, about 40% of the samples are QA samples, because of the stringent QA/QC requirements associated with this program. Logistic support, including mobile field labs, field crews, and helicopter support amounts to about $2300 per lake. Data analysis costs are about $1000 per lake. The remaining management costs bring the total cost per lake to $4200.

106. EPA has broadened Alternatives 2 and 3 to include the use of backpackers, and will consider the availability of experienced personnel if one of these alternatives is chosen.

Wyoming Outdoor Council (Letter #27)

107. EPA has broadened Alternatives 2 and 3 to include the use of backpackers, but agrees with the comment that ground access will present logistical problems and would have a higher chance of disturbing wilderness users. In addition, the increased numbers of sampling teams would mean that a significant risk of lower data quality would exist.

108. See response to Comment #10. A public involvement and education plan for Alternative 1 or 3, to be sponsored by EPA, will be developed to assist the FS in informing the public about survey activities.

109. This comment advises that the NSWS data must be able to "hold up under scientific scrutiny." The peer-review process used in recommending protocols (see p. 15 of the EA) was employed for this goal.

Bob Oset (Letter #28)

110. As addressed in the EA, Alternatives 2 and 3 involve the use of ground access as alternatives to use of helicopters.

111. The issue has been addressed on pp. 29, 51, and 71 of the EA. See response to Comment #10.

112. Alternatives 2 and 3 have been broadened to incorporate the use of foot access. Random sampling is required for statistically valid, legally defensible results; there is no basis for selecting "representative " lakes.

113. Alternative 2 has been broadened to incorporate the use of hikers. If this alternative is selected, EPA will use experienced personnel. EPA is concerned with liability in using volunteers (Sect. 1.5 of the EA).

Robert V. Walker (Letter #29)

114. See response to Comment #23. Hiking and horseback times were not estimated from guidebooks but were, as shown in Table 4.2-1 (p. 84), estimated for one-way transport out by FS staff in the respective wilderness areas involved.

115. See response to Comment #10.

The Colorado Mountain Club (Letter #30)

116. The EA identifies the major safety and logistical problems of using ground access. Further evaluation of these problems can only be done during the detailed planning which will occur after the decision on access mode is made.

U.S. Forest Service (Letter #31)

117. The Summary and Conclusions included in the Final EA have been revised to place an earlier emphasis on the conflict of using helicopters under the Wilderness Act. EPA has attempted, in cooperation with the FS, to define reasonable alternatives to gaining access to wilderness area lakes. Under NEPA, EPA is required to state its preferred alternative. It is also necessary to understand the consequences of adopting any alternative in terms of data quality and logistics in making the final decision.

118. The suggested wording has been added as the second paragraph in the EA.

119. Presenting a quantitative analysis of how data quality under each alternative would differ is difficult to do with the data available. However, EPA has prepared a supplementary analysis to address this issue (see Appendix E.1).

120. This comment and #133 address whether the expected data under Alternative 1 would not be more precise than needed. The objective of the NSWS is to obtain data of the highest quality that is feasible, anticipating that policy-makers will need data that can withstand challenge (e.g., if expensive controls on emissions are proposed).

121. This comment points out that criteria other than sample holding time should be used to select among the alternatives; factors such as protecting wilderness values were discussed in the EA and will likely be used by the FS in arriving at their decision. The seven hour criterion is not for economy or convenience, but rather for ensuring sample quality.

122. The description of Alternative 4 in the Summary and Conclusions has been rewritten.

123. EPA believes other means of access are not suitable for meeting the needs of the survey and, therefore, that the sentence, as written, is appropriate (see fuller explanation on pp. 50-52).

124. The paragraph has been rewritten in the revised Summary and Conclusions. The response to Comment #10 discusses the precedence issue.

125. The Summary and Conclusions has been revised to address this concern; the random sample must include wilderness areas to be representative of the region. See Appendix E.2..

126. The revisions to the Summary and Conclusions address this concern (see revised Table S-2).

127. Appendix E.7 indicates that the second and third lines of the last paragraph on page 5 will be modified to read ..."(i.e, most wilderness areas and national parks)...."

128. The data collected in Phase I of the NSWS should be useful to wilderness area managers concerned with taking steps to protect these areas from the effects of acidic deposition. In some wilderness areas (e.g., the Bridger Wilderness Area in Wyoming) sufficient numbers of lakes will be sampled to provide information useful to the specific area. More importantly, however, Phase I will provide a regional data base that will provide wilderness area managers a unique perspective on potential sensitivity of lakes within the wilderness system. The Phase I data base will allow extrapolation of results from detailed studies in Phases II and III and other ongoing research to geographic areas, including wilderness, thus allowing land managers to understand the nature and extent of the threat and take steps along with other government agencies such as EPA to protect the resources. Without such a data base, wilderness area managers will be faced with collecting data for each area piecemeal and

will not be able to place their results in a regional context. It is important to understand that the acidic deposition problem is regional in scope, and a regional approach to developing data is needed to understand and deal with it. Exclusion of wilderness areas from the survey would severely limit the applicability of the NSWS data base to wilderness area management problems; i.e., it would be difficult to apply Phase II and III results to these areas and to develop control strategies that would objectively factor in the sensitivities of wilderness area resources.

129. It is not the specific chemical determinations that will be made during the NSWS that should be at issue here. Most of the parameters can be measured with alternative protocols so that use of helicopters would not be needed. Measurements of monomeric aluminum using the established protocols require a short holding time and would provide a uniform evaluation of this biologically important chemical parameter. What is unique about the NSWS survey is the collection of high quality data from a large number of lakes within a short period of time so that the data are comparable to one another and can be used as a basis for extrapolation of more detailed studies in the future. Without this data base, trends of acidification will be difficult to identify and proposed approaches to establishing emission controls will be subject to legal challenge. Appendix E.1 evaluates the risk of reducing data quality that would be involved in adopting alternative access modes. EPA believes that use of helicopters is the most efficient and effective way of obtaining the data needed.

130. Section 1.5 of the EA addresses some of the concerns raised in this comment. Appendix E.7 has been added to provide supplementary discussion of the concerns raised in this comment.

131. The peer review is discussed and referenced on p. 15 (first paragraph after the list of chemical variables). Also, see revised Summary and Conclusions.

132. Information on whether or not each of the 13,506 lakes is located within a wilderness area is not available. The identification of lakes within wilderness area lakes was only done for those lakes selected as the random sample. The location of wilderness areas was unknown at the time the random sample was selected, so there could have been no targeting of wilderness area lakes for inclusion in the sample.

133. The comment questions the need for measurement of extractable aluminum in the NSWS as a whole, and in western lakes in particular. Data on extractable aluminum are important in characterizing the chemical composition of lakes and in the selection of regionally representative lakes for Phases II and III (see expanded list of primary objectives in the revised Summary and Conclusions). While western lakes are generally of near-neutral pH and presumably have low concentrations mof aluminum, the data are important for two reasons: (1) there is recent evidence that acid sensitive lakes exist in the West [pp. 1-2 of the EA,

The American West's Acid Rain Test World Resources Institute Research Report #1, March 1985] and (2) the NSWS calls for a consistent set of data, and it would not be proper to omit certain measurements because of the presumed results. See also responses to Comments #70 and #120. An expanded discussion of the importance of monomeric aluminum follows:

The NSWS objectives relate to all three phases of the survey. Phase II will include a determination of biological resources in a representative subset of Phase I lakes. Phase III will be a long-term chemical and biological monitoring program of a still smaller subset of Phase II lakes. Moreover, an ancillary objective of Phase I is to determine what data must be collected to support other projects within NAPAP, particularly within the Aquatic Effects Task Group.

There are substantial data available indicating that monomeric aluminum is the major ichthyotoxic form of dissolved aluminum and that it demonstrates a complex mode of action which includes impaired ion exchange and mucous clogging of the gills. The occurrence and bioavailability of this toxic form of aluminum is a function of pH, the load of organic ligands, and the calcium concentration in the receiving water.

In the absence of complexing organic ligands, dissolved monomeric aluminum levels can be expected to increase exponentially with decreasing solution pH. In the presence of weak organic acids with pK's near 4.5, dissolved aluminum will be complexed and precipitated, producing an apparent solubility maxima near pH 5. By providing statistically valid estimates of pH, monomeric aluminum and color (a surrogate for organic carbon), the NSWS will provide data useful for interpreting the complex interactions of these parameters and how their effects on aquatic biota are mediated by regional hydrogeology and water quality.

Measurements of monomeric aluminum in the NSWS population is critical if the survey is to meet its objectives vis-a-vis Phase II, Phase III, and NAPAP.

134. As indicated on p. 64, there will be detailed coordination between EPA Base Coordinators and local land managers in planning sampling of specific lakes. Under Alternative 3, three access modes would be considered for each lake (helicopter, horseback, or foot). The revised Summary and Conclusions Section of this Final EA includes a more detailed discussion of criteria that would be used for Alternative 3.

135. Such wording is appropriate for Sect. 4 (Environmental Consequences) rather than Sect. 3 (Affected Environment). Sect. 4.1.6 describes the suggested mitigation for conducting the NSWS under Alternative 1. In selecting lakes for sampling, wilderness areas were not considered because the objective was to get a completely random sample that could be used for extrapolating more detailed studies to an entire region. EPA proposes to preserve the wilderness environment by measures discussed in Sect. 4.1.6.

136. EPA believes that such considerations are more appropriate in Sect. 4 of the EA where safety is considered, rather than in Sect. 3, a description of the affected environment. Implications of extreme weather are discussed on pp. 66 and 73 of the EA.

137. See response to Comment #134.

138. The comment questions whether the data would be sufficient to characterize an individual lake. Characterization of individual lakes is not within the scope of the NSWS, Phase I, although some wildernesses could be characterized to the extent that several lakes within a wilderness are sampled; the number of lakes within a given wilderness was a random result of the process of lake selection.

The statement "the concept of protecting the wilderness system must be based on protecting each wilderness area," is an area of legal interpretation that is cloudy (pp. 35-36, 50-52, and 68-69) and of significance to the issue at hand. The Wilderness Act is ambiguous on the point (p. 69) as is the FS Manual. In either case, the FS Chief has the authority to permit helicopter use if it is felt such action is necessary for the protection of the wilderness system (p. 36).

139. A quantitative estimate of the error cannot be made without first collecting the data. On the basis of existing information, it is apparent that the error would be large because many of the lakes most sensitive to acidic desposition are located in wilderness areas. By not sampling the lakes in these areas, one would be biasing the study towards less sensitive lakes. Helicopter access is preferred because the highest quality data can be obtained using established protocols (Appendix E.1). A complete survey of location of sensitive lakes and in alkalinity classes in relation to wilderness areas was outside the scope of this EA.

140. See revised Summary and Conclusions and Appendix E.

141. See Appendix G.

National Park Service (Letter #32)

142. Table S-1 has been modified as suggested.

143. This statement has been added to the Affected Environment section of the revised Summary and Conclusions.

144. A statement recognizing this concern has been added to the Summary and Conclusions. Detailed planning between the EPA Base Coordinator and local NPS staff, as described on p. 64 of the EA, will take this type of concern into account before sampling occurs.

145. Close coordination will occur (see response to Comment #155 and pp. 61, 62, and 64 of the EA)

146. Sensitive areas will be considered during coordination (Sect. 4.1.6); existing studies have been considered during design of the NSWS and will continue to be used in later phases.

147. NPS comments on the preliminary draft were not received in time to incorporate major changes into the Draft EA.

148. The EA recognizes the sensitivity at Olympic National Park (p. 61). EPA Base Coordinators will work closely with NPS staff at the Olympic National Park to resolve this concern.

149. Alternatives 2 and 3 have been broadened to include foot access.

150. Because EPA anticipates deleting a few lakes from the sample for reasons similar to those mentioned in the comment, there should be no problem in deleting this one.

151. This change is noted in the errata sheet provided with the Final EA.

152. EPA Base Coordinators will work closely with local NPS staff at Mount Rainier to resolve this concern.

153. EPA plans to work closely with local land managers (p. 64) in detailed planning for sampling.

154. See response to Comment #144.

155. EPA Base Coordinators plan to work with local NPS staff to mitigate any potential impacts on visitors (pp. 64-68 of the EA).

156. This comment suggests that if the effects of helicopter landings and exhaust on the lakes were a problem, the helicopter could land near the lake and the sampling crew could walk to the lake (and presumedly use an inflatable boat to sample, similar to Alternative 2). As discussed in responses to Comments #14, #53, and #186, effects of the helicopters on the lakes are not expected to be significant.

157. See the Public Involvement Plan attached to this EA. EPA will work with NPS staff in preparing materials and administering the plan.

158. EPA will provide the information as requested.

159. See response to Comment #144.

160. The analysis on p. 61 of the EA addresses this concern.

161. EPA Base Coordinators will work with local NPS staff to determine whether any samples should be collected in this area, and depending on the alternative selected, the mode of access.

162. See response to Comments #148 and #149.

163. EPA will re-evaluate this lake.

164. See response to Comment #155; adjusting schedules for sampling is one such mitigation measure.

165. Dropping a few lakes from the sample is anticipated by EPA; Base Coordinators will work with local NPS staff at Yosemite to resolve this concern.

166. The purpose of the Phase I survey is to provide a uniform data base for the Nation so that data from specific studies such as the one mentioned and from Phase II and III can be statistically related to a regional context.

167. EPA used USGS maps to determine lake names, and in some cases contacted local land managers for assistance in naming lakes. EPA Base Coordinators will work with NPS staff to refine the identification of lakes in Sequoia-Kings Canyon National Parks and elsewhere during the detailed planning phase.

168. EPA notes this restriction.

169. Sect. 4.1.6 indicates that sampling on weekends will be avoided when necessary to minimize impacts on backcountry users.

170. Once Phase I is completed to establish a statistical data base on the distribution of sensitive lakes, Phase II and Phase III, incorporating the types of studies described in the comment, will be undertaken (see p. 2 of the EA).

171. Alternatives 2 and 3 include alternatives to using helicopters.

172. See response to Comment #149; EPA Base Coordinators will work with Glacier Park personnel to resolve conflicts of using helicopters if Alternatives 1 or 3 are selected.

173. See responses to Comments #155 and #172.

174. The number of lakes selected for sampling in Rocky Mountain National Park is based on a random sample, and probably reflects the fact that lakes in the three alkalinity classes being sampled primarily occur in high mountain lakes. It is unlikely that another random selection would change by much the number of lakes being sampled in the park.

175. Appendix A.2 lists the lakes in each National Park.

176. EPA Base Coordinators will work closely with local NPS land managers (Sect. 4.1.6 of the EA).

177. See response to Comment #176.

178. EPA will use experienced pilots (pp. 65-66).

179. Such measures will be included as part of the training program and safety program described in Sect. 4.1.6 of the EA.

180. If helicopters are used, EPA plans to land on the lake, not around it. EPA Base Coordinators will work with Grand Teton National Park staff to resolve this problem.

181. EPA Management Team staff are familiar with the studies described and will consider them in developing all three phases of the NSWS.

182. These comments are noted. EPA Base Coordinators will discuss them with local NPS staff during detailed planning.

183. See response to Comment #144.

184. EPA appreciates NPS cooperation; Base Coordinators will contact NPS staff during planning after the decision on access mode is made.

State of Wyoming, Game and Fish Department (Letter #33)

Comment acknowledged.

Wyoming Outfitters (Letter #34)

185. EPA regrets that you were unaware of this proposal. As discussed in Sect. 1.4 of the EA, EPA has made an extensive effort to involve the public and government agencies in defining the scope of the EA, including press releases that generated numerous stories in the press and on radio and television.

186. Alternative 2, which has been broadened to include foot access, is described in the EA as one alternative to obtaining the samples within wilderness areas.

187. Public notice of the proposed project was made on December 20, 1985, (see response to Comment #185) and numerous stories appeared in the press and on radio and television thereafter. EPA plans to work with local land managers to minimize conflicts with hunters and other wilderness users (Sect. 4.1.6 of the EA).

188. Data quality is extremely important in this survey, and there is legitimate concern that the survey objectives cannot be met with access modes other than helicopter. Alternative 2, however, has been developed as a reasonable alternative to be considered in making the decision on access to wilderness areas.

State of California, Air Resources Board (Letter #35)

189. EPA believes that routine helicopter emissions will have minimal effects on air quality in wilderness areas because of the short time the helicopters will be present within wilderness. A supplementary analysis is included with this Final EA to show the levels of emission from helicopter engines similar to those that will be used in the survey. See response to Comment #53 for discussion of potential effects of emissions on aquatic resources.

Montana Audubon Council (Letter #36)

Comment acknowledged.

Laurie Ellen Scheer (Letter #37)

Comment acknowledged.

Dennis Austin (Letter #38)

190. The EPA management team will consider the possible addition of these lakes to the sampling program, but they would, of course, not be part of the random sample.

State of Wyoming, Office of the Governor and State Engineer's Office (Letter #40)

191. The purpose of the Phase I survey is to provide a statistically valid data basis that can be used to identify potentially sensitive lakes and for extrapolating data from future, more detailed studies on trends in acidification and the effects thereof. EPA agrees that the Phase I data will not by themselves provide a measure of trends.

192. As noted in the response to the previous comment, more detailed studies will be parts of Phases II and III (also, deposition monitoring is addressed in other NAPAP research tasks). EPA does not foresee the(-GO-TO-GL-) mechanized transport in wilderness areas for these later studies. In fact, an advantage of having the Phase I data set is that detailed studies involving repeated visits and installation of equipment can be focused on regionally representative lakes outside wilderness areas. It will be possible to relate the results of these studies to wilderness area lakes because of the statistical data developed during Phase I.

193. EPA has no intention of doing deposition monitoring within wilderness areas. Such monitoring might be more appropriate for the FS and NPS. Deposition monitoring on a national basis is conducted as a part of NAPAP.

194. The Phase I study addressed in the EA should be evaluated in the context of the whole NSWS, the scope of which should be responsive to your concerns.

State of Colorado, Division of Wildlife (Letter #41)

195. See response to Comment #10.

196. EPA will work closely with local land managers to minimize any impact on big game hunters (p. 68 of the EA).

197. EPA is considering marking the helicopters as suggested.

198. The data generated during the NSWS will be made available to interested parties.

Environmental Defense Fund (Letter #42)

199. Alternative 3 provides a basis for detailed planning of several access modes (foot, horse, and helicopter). No matter which of the alternatives is selected, EPA Base Coordinators will work closely with the FS, the NPS, and other land managers in planning the sampling program to minimize impacts (Sect. 4.1.6 of the EA).

200. Under Alternative 3 of the EA, EPA would be able to work with the FS and NPS to limit the use of helicopters to lakes where they are most needed. Additional information developed by EPA in consultation with FS and NPS staff (Appendix E) indicates that under Alternative 3, as many as 40% of the lakes would not be accessible by horse and would, therefore, have to be accessed by helicopter or foot.

201. Under Alternative 3, EPA would have the option of limiting helicopter access to those lakes which could not be sampled in a manner that would significantly modify the established protocols. Data quality, however, would be less certain than for Alternative 1. EPA has spent considerable time in documenting the quality of data required in this study. The methods chosen and the sampling design have undergone extensive peer review (p. 15 of the EA).

202. As noted in response to Comment #200, EPA has developed additional information that indicates as many as 40% of the lakes would not be accessible by horse (Appendix E.4). If Alternative 3 were selected, EPA Base Coordinators and local land managers would work closely together in assessing the number of lakes that can be reached by horse or foot within the 7 h time constraint. By combining different sampling techniques cumulative sources of error are introduced and data quality is less certain.

203. Alternative 3 is being considered by EPA in the EA.

204. EPA concurs with EDF's comment and believes that the request to conduct NSWS sampling in wilderness areas is a unique request which should not set a precedent for future requests.

205. The short holding time protocols have been subject to scientific peer review, which is referenced on p. 15 of the EA. Also, see Appendix E.1.

206. See responses to Comments #200 and #202.

207. Identification of specific lakes would occur during detailed planning between EPA Base Coordinators and local land managers.

208. EPA would attempt to do this within the logistical and data quality constraints discussed in the EA under Alternative 3.

209. The FS plans to issue a decision in early May.

APPENDIX G

PUBLIC INVOLVEMENT PLAN

A scoping process was undertaken to involve affected government agencies and the public in defining issues to be addressed in the EA. The scoping process has consisted of three types of interactions. Initially, meetings were held between headquarters staff of EPA, the FS, and the NPS to discuss the concerns of the land management agencies and to define the type of analysis that would be needed. Following a meeting in Washington D.C. on November 7, 1984, EPA decided to hold a series of scoping sessions with FS staff in the five most affected FS Regions, to describe the proposed survey and solicit regional FS concerns. Meetings were held in Missoula, Montana; Ogden, Utah; Portland, Oregon; San Francisco, California; and Lakewood, Colorado, between November 26 and December 7, 1984. In addition to FS and EPA staff, representatives from the Department of the Interior and various state agencies attended some of the meetings. On December 14, 1984, a request for public comment was sent directly to interested organizations. On December 20th, a press release was sent to the Associated Press and United Press International wire services in each of the affected states. Since that time numerous stories have appeared in the press and on the radio. These stories have generated a number of comments to EPA.

The draft EA was published on March 1, 1985, and comments from government agencies and interested members of the public were solicited. Forty-two letters with comments on the EA from state and federal government agencies, environmental groups, and citizens were received. These comments have been reviewed and the EA revised in response (Appendix F).

If a decision is made that allows access of wilderness area lakes by helicopter (Alternatives 1 or 3), a communications plan will be developed to describe and coordinate EPA's activities for release of information to the public on the western lakes portion of the national acid rain survey. The objective here is to mitigate the effect of EPA's sampling in the wilderness areas on those who depend on those areas for solitude and moral restoration. This plan will provide a variety of information to the public. The purpose of the survey as well as EPA's reasons for preferring to use helicopters will be presented. In addition, the actual schedule of sampling will be presented. This will allow people to see when EPA will be sampling in each of the affected wilderness areas. If Alternative 2 (ground access only) is selected, a somewhat reduced plan will be prepared because ground access would be of less concern to wilderness users.

This part of the plan will include the following actions: presentations to interested groups; notices of the action, posted at all wilderness entrances and distributed to the public through the FS and NPS, and other government agencies, the preparation of news releases, public service announcements, and videotapes for newspapers, radio and television; and the preparation of articles for state game and conservation magazines.

EPA's regional office in Seattle will have the lead responsibility for developing and implementing this communications plan. However, the regional offices in San Francisco and Denver will also play a role in soliciting public input and informing interested parties in each phase of the plan.